The Impact of Cellphones in the Classroom

An analysis of the pro's, con's and best practices.

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Abstract

Cell phone use has exploded in the past 5 years within schools and has left teachers and educators at all levels scrambling to determine how to manage them. Like any new technology cell phones provide both positive and negative consequences with their use. This paper provides a background to the development of the cell phone, looks at the issue of cell phone use in the classroom, provides an analysis of current "No Cell Phone" policies, and discusses the challenges and opportunities available when cell phones are utilized in class. In conclusion, due the ever increasing presence of cell phones in society, allowing cellphones use in the classroom will be inevitable and, with the right guidance, also be an important part in supporting students as they prepare for 21st Century jobs. As stated by Liz Kolb " a basic cell phone can be the Swiss Army knife of digital learning tools."(Kolb, 2014). Teachers will need to learn how to give the right amount of guidance and plan engaging lessons so students can unleash the power of cell phones as learning tools.

In the past decade smart phones have revolutionized the way people interact with the world around them. While smart phones at first were the realm of business people and adults they are now utilized by children on a frequent basis. Smart phones and their apps have completely changed the way we interact with each other and children have become immersed in its use from a young age. They allow users to communicate through text messaging and apps like Facebook, Twitter, Snapchat to name a few. They are entertainment tools allowing us to watch movies, videos, read novels, listen to music and play entertainment games. They are also productivity tools that have allowed people to break free of the traditional office and work whenever and where ever they want. Cell phones also have allowed us to learn about our world.

Cell phones have the potential to be powerful learning tools, the question is whether or not they can be effectively utilized within the classroom. This paper will examine how cellphones have penetrated the classroom environment, the varying opinions and policies controlling their presence and whether they can be successful tools to help students learn. To better understand the issues, a brief history of the cell phone is needed to bring context to this situation.

A Brief Cell Phone History

According to Goodwin (2015), "the world's first mobile phone call was made on April 3, 1973, when Martin Cooper, a senior engineer at Motorola, called a rival telecommunications company and informed them he was speaking via a mobile phone." It was not until ten years later that "Motorola released its first commercial mobile phone, known as the Motorola DynaTAC 8000X. The handset offered 30 minutes of talk-time, six hours standby, and could store 30 phone numbers. It also cost £2639 ($3995)" (Goodwin, 2015). At the time these phones were built for the rich and business people and were considered luxury items, not average consumer items. It wasn't until the early 1990's that cell phones

were "starting to appear in the hands of average consumers for the first time. By the late-1990s, mobile

devices were fast becoming the norm" (Goodwin 2015). At the turn of the century cell phones slowly

started to emerge as smart phones. Features such as cameras, colour screens, email, calendars, and

other options started to be integrated into a variety of phones by companies such as Motorola, Nokia,

Blackberry and Samsung. With new features, cell phones started to move beyond just being mobile

phones, but productivity tools with most features were made with the business person in mind. Internet

connectivity was limited and of poor quality. The keyboard was still the standard telephone dial pad or,

in the case of Blackberry, a very small thumb keyboard.

It wasn't until 2008 with the introduction of the iPhone 3G in Canada that touch screens became the

norm and the abbreviation "apps" (short for applications) started to become a household name. These

phones had intuitive touch screen functions, allowed users to surf the internet, text, take pictures and

play a variety of games. It is interesting to note that Apple's App store also debuted in 2008 with around

500 apps available (Cherner T., Dix J., Lee C. 2014). In the past 8 years, the use of smart phones and cell

phones among people has exploded due to an increased number and quality of apps as well as price

drops . According to Norris (2011)

> There are approximately 6.8 billion people on the planet. Approximately 2.6 billion people do
>
> not have proper sanitation facilities-they do not have water for drinking, for example. There are
>
> approximately 4.18 billion mobile phones in circulation worldwide. Do the math: if you have
>
> potable water, you have a mobile phone. No other modern technology on the planet has that
>
> level of adoption.

 Cell phones have revolutionized the way human beings interact with the world around them and

continue to get more popular. Where do students fit in this picture? How many of them have cell

phones?

The current ownership of cellphones among students and its importance to educators

Michael Oliveria states "A survey of more than 5,400 Canadian kids in grades 4 through 11 found a majority had their own cellphone, while nearly one in four of the youngest children owned a mobile device." He later stated that "90 percent of the oldest students (in grade 11) had their own cellphone… But it was eye-opening for him to learn that about a quarter of 9 - and 10-year-old students had their own device." (Oliveria 2014) This reality has led to these devices following students to schools and in the past couple of years has left teachers and school administrators scrambling on how to deal with this new technology.

Cellphone Use Challenges:

The number one issue raised by teachers is that cell phones pose a distraction to students. According to Quifeng Gao, Zheng Yan, Chongwei Zhao, Ying Pan and Lei Mo (2014) cell phones provide "various issues… including distractions to the learning environment, mobile phone rings and instant messaging impacting academic performance, cheating on tests by accessing previously stored notes or using calculator functions to cheat on tests" to name a few. Certainly cell phones can be viewed as a hindrance to promoting the ideal learning environment when instructing and completing work in the classroom, especially when no set structure for classroom use is implemented.

Other issues such as cyber-bullying, sexting and other inappropriate cell phone use have caused many schools to implement an outright ban simply for the sake of protecting their students. In a survey of American schools found that 84% of the schools they surveyed had a cell phone use policy and of those schools only 24% allowed students to use the cell phone in school (Obringer and Coffey 2007). So many schools felt that if cell phones are not allowed on the school grounds then all the issues associated with cell phone use simply disappear. Not having cell phones in schools removes distractions, limits too much access to the internet, reduces cyberbullying and inappropriate use of social media apps (Chief Editor,

2015). Simply banning cell phones does appear to have many potential benefits, but the actual

implementation on these policies has posed challenges.

An interesting court case arose out of New York Public's school enforcement of their "No Cell Phone

Policy". In the lawsuit Price vs. New York City Board of Education, parents of students attending New

York City's public schools brought a lawsuit against the board after a

> 2006 enforcement of a policy banning student cell phones in city's schools. To enforce the ban
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> on cell phones and other contraband, school officials began sending portable metal detectors to
>
> random sets of schools, resulting in the confiscation of approximately 3,000 cell phones. The
>
> ban created uproar among the parents who claimed the cell phones were vital tools to enable
>
> communication with their children and ensure their safety before and after the school day. In
>
> essence the parents claimed the ban violated their constitutionally protected right to direct the
>
> care, custody and control of their children. (Maddox 2012)

In the end the parents did not win the court case and the courts decided that "the decision to ban cell

phone possession was rationally related to legitimate government goals of maintaining order and

discipline in schools… the ban did not prevent parental communication with children before and after

school and thus did not "directly and substantially" infringe on that interest."(Maddox 2012) The case

highlights parent's perceptions as cell-phones being vital to their children, even if the reasons between

why they are so important differ from their children. The enforcement of this policy and the subsequent

lawsuit led to a large financial and time cost for this schools division and leads to questions about

whether these policies are worth the time and cost. While the New York case is one of the most notable

on cell phone banning policies, it is not the only instance where cell phones have been confiscated when

in violation of a no cell phone policy. Maddox highlighted that there have been many instances in the

States where cell phones have been confiscated and retained for a period of time, ranging from a couple

days to a month, and parents challenging the schools on this decision. It is likely that these sort of confrontations between students, teachers, parents and administrators, both inside the courtroom and out, will continue to happen with "No Cell Phone" policies in place.

In essence teachers, administrators and secretaries have become Cell Phone Police. Lynn Moulton, a vice principal at Halifax West High School said at her school's no cell phone policy she "would go out at the end of the day with an armload of cellphones with names attached to them for the secretary to distribute to students… It became a big part of the day and we felt that it wasn't a very good use of our time." (Paquette D. 2015) It is fair to say that these sort of situations are becoming more common for administrators in schools that have a "No Cell Phone" policy.

Certainly situations like this call for better communication of policies among all stakeholders in schools, yet it is unlikely that these sorts of situations between students, parents and schools will disappear under a "No Cell Phone" policy framework. Parents are just as attached to the cellphones as their children are, and in today's society cell phones are seen as vital components of people's lives. This leads school divisions to grapple with an important question "Do we continue to ban cell phone use within the schools or is there a way they can have students utilize them within the school appropriately?

Cellphone use Opportunities:

According to Cathleen Norris and Elliot Soloway we are "speeding past the Steve Jobs Post-PC Era into the Age of Mobilism… each and every student… will be using their own mobile computing device, with those devices engendering the most disruptive transformation in education in 150 years" (Norris & Solloway, 2011). Cell phones have changed the world in a short eight years since their arrival and teachers are on the front lines of this transformation. There is no escaping the fact that the cell phone is here to stay. While Norris and Solloway's timeframe that by 2015 every student from K-12 will own a cell phone was a little ambitious, it is no doubt likely to happen soon and educators need to be prepared

for it. In their article they noted that mobile devices have now outstripped desktop computers as the tool used to access the Web (Norris & Solloway, 2011).. They argue that "classrooms will move from today's "I Teach" teacher-centric and, by and large, ineffective and boring pedagogy to a "We Learn" pedagogy where the teacher learns with the students, mastering content and practicing key 21st century skills."

Instead of banning their usage due to the negative impacts of cell phones, certain school districts and teachers are beginning to see the potential to utilize cell phones within their schools to enhance their student's motivation and learning. While there are a variety of programs and ways that cell phones can be used in the classroom they all tend to fall under the new term called Bring Your Own Device (BYOD).

BYOD programs

The term Bring Your Own Device refers to the policy of permitting employees to bring personally owned mobile devices (laptops, tablets, and smart phones) to their workplace and to use those devices to access privileged company information and applications, and is also used to describe the same practice applied to students using personally owned devices in education settings (Wikipedia, 2016). In the educational realm, Bring Your Own Device Programs allow students to utilize their cell phones, with the teacher's direction, for various learning activities within the classroom.

There are a number of ways that teachers can utilize BYOD programs in their classroom. In her book *Cell Phones in the Classroom: A practical Guide for Educators,* Liz Kolb provides a couple examples of programs that have been utilized by teachers.

One of the programs she highlights is called Poll Everywhere (https://www.polleverywhere.com) to check students' comprehension during a lesson. The website allows teachers to set up a poll that students, using their cellphone, can text a vote answer to. This program allows all students to participate

in answering basic questions about a lesson no matter what type of cell phone they are using (Kolb L.

2011). The benefits of Poll Everywhere are that students have an intrinsic motivation to use their

phones. Teachers can get real-time snap shot of class understanding of a subject and can be used as a

formative assessment for individual students and help to tailor instruction for the entire class.

Another project Kolb mentions in her book was one designed by Jarrod Robinson at Boort Secondary

College in Victoria, Australia.

> One of the first projects that Robinson developed with QR (quick response) codes was a GPS
>
> scavenger hunt. Robinson created QR code "clues" that students found around the school.
>
> Students downloaded and used a QR code reader to get the clue, which would give them an
>
> idea of where they had to go within the school to get the next clue. (Kolb 2011, pg. 88).

Robbinson latter used QR codes imbedded in his math worksheets to give students further information

on how to solve the questions. His QR codes may direct students to a YouTube video, audio file, step by

step instructions to help them. QR codes are gaining popularity in schools with my school division

starting to utilize them in many different and creative ways in the past 2 years. We have seen them used

to watch videos on how to solve math problems. Help students look up locations on a map in social

studies of a country they are studying. Allow parents to download the app called Remind or Class Dojo

to help them stay in contact with the teacher and see how their child is doing. The possibilities for their

use are endless and it allows students to utilize their cell phones as learning and communication tools

with their teachers.

The two examples listed are only the tip of the iceberg in terms of how cell phones can be utilized. In the

Canandian article BYOD How Schools are Implementing "Bring Your Own Device" Martha Beach explains

how BYOD may look like in a classroom.

After a brief overview of last night's homework, the teacher lets them know they have thirty

minutes to work on their group project… The class is almost silent as they open up digital files,

shared through the school's newly installed WiFi network, to collaborate on research and

writing, gathering, creating, and sharing a group presentation."(Beach 2014).

Improving collaborative learning among students is one other area cell phone use can support.

Benefits of BYOD programs

BYOD programs can provide benefits on a number of fronts. First off, Beach noted that "BYOD can save a

school money on infrastructure and may foretell the end of dedicated classroom computer labs." (Beach

2014). Having students bring their own devices to school can free up how many computers a school

purchases for classrooms, thereby reducing schools overall operation costs. In the age of school budget

cuts, significant cost savings can be seen not just in purchasing of computers but in maintenance and

upkeep of them.

Secondly, a student's cell phone is a familiar piece of equipment to them. That familiarity can free up

class time that would be needed to train students on a new device or program. As Kolb highlighted

"Class time is precious. Cell phones can help teachers increase the amount of class time spent teaching

and learning… because most students already know how to use a cell phone (often better than their

teachers do)" (Kolb L. 2011). Students tend to be masters of their own devices and are able to problem

solve technology issues that may arise in class.

Thirdly, Kolb says "Cell phones facilitate learning anytime, anywhere, from any source, at any pace.

Twenty-first century students don't want learning to be confined to a classroom or even a library" (Kolb

2011). Well-designed BYOD programs that allow students to access notes and assignments that

supplement in-class work allow students to work and learn at their own pace on devices they are

comfortable with. With teacher guidance and instruction students can realize the wealth of information available to them through their cell phones and help them to develop into life-long learners who can access information when they need.

Forth, and perhaps one of the most important aspects, is that "Students love them." (Kolb 2011). This simple fact of the close attachment that students have to their cell phone means that classroom activities that utilize them will cause students to be highly motivated for the learning activity.

"Kids already know how to use their devices, but they don't know how to learn with their devices. It is the teacher's role to help them discover how to connect content, one another and learning with a device that they may have only used for texting and Facebook previously" (Schwartz, 2014).

So do BYOD programs actually improve student learning? Current research says yes. Matthew Lynch states that BYOD programs saw 54% of 8th graders got more involved in the class that allowed the use of technology with 55% wishing that the instructor used more educational games or simulations to teach lessons (Lynch M. 2015). He also noted that certain apps showed a marked increase in vocabulary for preschoolers and that math scores improved after utilizing a math app routinely with elementary students.

Challenges of BYOD programs

BYOD programs are not without their own challenges to implement. Certain hardware issues along with policies and instruction must be implemented in order for these programs to be successful. Donna Carey identified the following issues:

- The need for the network infrastructure to support multiple wireless devices through increased bandwidth.
- The need for increased network security to protect sensitive information.

- The need for increased IT support of the system and the variety of mobile devices utilized.

- The issue of equity and how to address the inequity of access to technologies.

- The disruptions caused in the classroom by mobile devices (Carey 2015).

Many different articles suggested that a successful BYOD program needs to be done as a small scale

pilot project that slowly tests the system and adapts to challenges and issues as they arrive. Teachers

considering a BYOD device program need to ask themselves the following questions:

- How will utilizing their device improve learning?

- What rules need to be in place so students understand what they can or cannot do?

- Does your school have a dedicated WiFi network that is open to student devices and can handle
  the extra bandwidth?

- Is the network safe and do students understand the acceptable use policies of their school?

                                                          (Saskatchewan Ministry of Education 2015)

Carey stressed that "for today's students to fully participate in a BYOD program educational

institutions… need to develop clear policies about how the technology will be used and supported as

well as the costs and responsibilities" (Carey 2015). These need to be discussed at both the school and

school division level with all stakeholders involved in order to ensure that everyone is clear on their

roles and the policies.

At this point it is important to note that teachers are just in the infancy of the arrival of cell phones in

the classroom and BYOD programs. Depending on the age and interest of the teacher our level of

comfort with cell phones in the classroom and implementing BYOD varies dramatically. As Donna Carey

highlighted "those individuals born prior to 1980 as "digital immigrants" because they have not grown

up with technology and often struggle to incorporate it into their personal and professional lives at a

pace comparable to the "digital natives" (Carey 2015, pg. 7). It raises an interesting point in terms of the

educational field at this time. Teachers aged 35 and younger would be considered "digital natives",

comfortable with technology and, partly due to their age and relatively young careers, more likely to

take risks, be creative and innovate. Those teachers older than 35 would be considered "digital

immigrants" who have not grown up surrounded by technology and, unless very passionate and a

naturally affluent in technology, tend to be more set into their teaching methodologies and not as

comfortable with learning new technology and utilizing it frequently and effectively within the

classroom. By applying this filter to school divisions it may help to clarify why some schools have

adopted very restrictive cell phone policies while other school divisions have been more progressive.

Prensky states "Many of the classrooms of the 21st Century are being populated by digital natives being

led by digital immigrants" (as cited in Carey 2015, pg. 56) with policies that continue to support the ban

on cell phone and mobile technology use by students." As mentioned earlier it has only been 8 years

since the first iPhone and the first apps became available. With the pace of change these days, 8 years

seems like a lifetime ago, but in the context of experimenting and utilizing this technology, teachers and

schools still have a lot to figure out.

Digital Citizenship

An important component of implementing cell phone use in the classroom is ensuring that students

know how to use their device properly and appropriately. The term used to describe this is known as

Digital Citizenship. According to Carey, "Prensky (2010) refers to today's students as "digital natives,"

but Merrow (2012) wonders whether they are also digital citizens" (Carey 2015). Citizenship is defined

as "the state of being a citizen of a particular social, political or national community [which] carries both

rights and responsibilities" (Saskatchewan Ministry of Education 2015). Digital Citizenship therefor is

"[considering] how we act as members of a network of people that included both our next-door

neighbor and individuals on the other side of the planet and requires an awareness of the ways in which technology mediates our participation in this network. It may be defined as "the norms of appropriate and responsible online behavior." (Saskatchewan Ministry of Education 2015). As the world continues to become more connected and our students become global citizens it is imperative that teachers teach students how to utilize technology appropriately so they learn how to be good digital citizens that our prepared for life in a digital online society.

In Saskatchewan, the Ministry of Education has come out with a policy planning guide entitled "Digital Citizenship Education in Saskatchewan Schools" as a road map to help schools and teach digital citizenship from Kindergarten to Grade 12. The guide also includes a section on BYOD with important questions to consider when implementing a program. Teachers need to ensure that they are also teaching students how to be good digital citizens along with the curricular outcomes. If teachers don't take the time to help students understand what is appropriate and what is not when utilizing cell phones, then we are doing them a disservice and setting up BYOD programs for failure.

Conclusion:

The fact of the matter is that cell phones are not going to disappear anytime soon from our lives. It leaves educators with an important question to ponder: "to ban or not to ban". In the words of Qiufeng, "A New Technology essentially is a double-edged sword that has both profound positive and negative social consequences... It can be a powerful tool for learning or a major source of distraction." (Qiufeng et al. 2014). Educators need to look at cell phones as an opportunity to further help our students learn and encourage them to become effective users of technology and proper digital citizens. By embracing cell phones and teaching students how to use them to learn and appropriate ways to use them we will help students to become good digital citizens. By simply banning cell phones and, in essence "burying our head in the sand" and ignoring the tide of change, teachers are doing students, themselves, and

ultimately the educational field a major disservice. Therefore teachers and school divisions will need to

embrace appropriate cell phone use in schools in today's fast changing digital landscape, or be left

behind and in the end not be giving our students the best opportunities for their future. There is room

for a lot of growth in this area and it will be interesting to see more research on best practices emerge in

the future.

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