

The Surge in Smartphone Usage : How is it Altering Society ?

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1. Introduction

A few short years ago if someone were to ask a person “if they owned a smart phone ?” they would gather that it was the beginning of a joke. Smartphones are no laughing matter these days though. They are rapidly changing how we do the simplest of things. It would be surprising to find anyone in the world who does not know what a smartphone is or that has at least heard the word ‘smartphone’. Consumers are in process of traversing away from the use of conventional cell phone as the smartphones are beginning the norm of the society (Sarwar & Soomro, 2013). They have advanced from the days of simple cell phone capabilities to ever expanding ways to alter and although sometimes debatable ‘improve’ our daily behavior. The launch of the iPhone in 2007 transformed the humble mobile phone from a one-trick tool for communication into a catch-all platform whose functionality is constantly evolving (Philips, 2014). Currently new functions and ways to encompass them into our lives seem to be expanding exponentially daily. Smartphones typically have touch screens, mobile Internet access via Wi-Fi or cellular networks, capability for installation of smartphone applications, and other functions such as media players, digital cameras, and GPS-based navigation (Haug, et al, 2015). Although most often associated with Apple Computer Company, there are many types and brands of mobile phones as they are also referred to.

Each phone and phone carrier can differ greatly on amount of storage and basic applications. Many of the newer applications or ‘apps’ come with a price though.

The initial price for a smartphone can also vary significantly depending on what region or which country one resides. The price of a SMART phone (iPhone) or other computing device is only the beginning of the continuous cost cycle of expenses for the privilege of joining a provider service (Carley, 2016). Connectible access can also drastically differ regarding the internet provider or phone company a person has contracted to. Thusly, although a smartphone is basically made the same way with only slight variations in brand names the difference in what someone can access and for how long, all depends on how much money they have spent to get connected. Smartphones are distinguished from other cellular phones by having large screens (commonly measuring four to six inches on the diagonal) and the ability to run advanced applications using software akin to a computer operating system (Molyneux, 2017). The competition between smartphone companies to produce low priced smart devices has led to a significant increase in the number of students possessing smartphones, which, in turn, increases the likelihood of smartphone addition among students (Abo-Jedi, 2008). In 2015, mobile devices including smartphones and tablets for the first time accounted for the majority (51 percent) of time spent with digital media, outpacing all other connected platforms combined (Bosomworth 2015). Because of its popularity, the use of the smartphone has become an indicator of economic status and possession of a smartphone is associated with several psychological and social concepts such as the popularity implied by achieving many friends or followers (Aljomaa, et al, 2015).

At the surface, the fact that smartphones are desired by many may cause us to think that it is a socioeconomic “equalizer.” But given that the phones cost the

rich person nothing – figuratively in relation to their wealth, and literally through two-year contracts – we see that the poor can actually end up paying more for them (Lasco, 2015).

A social inequality has begun to immerge that is only widening as the smartphone phenomena expands more and more. Whereas it is hard to argue that society has not benefited from the Internet in areas such as education (Abachi & Muhammad, 2013), commerce (Angelides, 1997), and entertainment (Lipschultz, 2000), the reviews are mixed with regard to its impact on our social and psychological live (Lundquist, et al, 2014).

2. General Uses

The operation of smartphones has broadened to almost limitless means in just a few short years. These days there are many people who could not imagine a day without them.

In the desktop era, the internet seemed like a separate place partitioned off from everyday life by monitor screens. Mobile devices, especially our multiplying smart devices, integrate the virtual and the real as we carry the net with us, entertaining and informing ourselves and sharing our thoughts and experiences while we navigate through our daily lives. Mobile devices also represent a return to embodiment, augmenting our brains and our senses as we interact with the world around us. For now, we keep them close to our bodies, waiting for the day when they will migrate into our clothing and, eventually, under our skin. No longer will we enter cyberspace, cyberspace will enter us (Pegrum, 2014)

As smartphones are still evolving their exact definition is problematic. What is not questionable is their encroachment into our daily routines. Some types of apps (applications) may be more age desirable than others.

- Among all groups, the 18-24 age one demonstrates the greatest time spent. In this age people aren't generally married yet and not really busy with their career, they are on the peak of their social life, so, naturally, they have plenty of time to spend on apps.
- In the age 25-34 group people are focused on their career and hence less time for media content consumption apps, also they get married and have kids, all these factors combined decrease amount of time they can devote to apps.
- Starting age 35-44 amount of time people spend on iPad and other tablet computer apps increase, partly because of people's sight is getting worse gradually and tablets provide a better reading experience than smartphone do, partly because they spend time with their kids, using tablets for education and entertainment (Dogtiev, 2015).

Studies shows that there are diverse needs for using smartphones, which can be grouped into six general factors: caring for others, following popular trends, communication, information, accessibility and passing time (Park & Lee, 2012). For those in many developing countries, a smartphone is their first computer and their only Internet-connected device (Bonnington, 2015). There are now multi-ways of communicating depending on how long or complex a person wishes to correspond. Work, busyness, need for control, power, and need for immediacy

have become accepted, if not encouraged, forms of addiction in American society (Lundquist, et al, 2014).

Asia as in many other business and social areas leads the world in digital growth and internet usage.

Digital growth across Asia-Pacific accelerated versus growth over the previous 12 months, with internet users up 15% year-on-year to pass the 1.9 billion mark. Social media growth rates accelerated by more than 50% versus 2015, with social media use overall up 25%, compared to 14% growth in last year's report (Kemp, 2017)

Not surprising the demand for smartphone devices has catapulted this desire for continuous connectivity. Almost two-thirds of the world's population now has a mobile phone (Kemp, 2017). "The record demand for smartphones in the second quarter of this year shows that, despite saturation in some markets, the desire to own a smartphone is a worldwide phenomenon," said Arndt Polifke, global director of telecom research at GfK (Cox, 2017).

3. Business Management

Smartphones for business managers and sales representatives offer a variety of options and convinces that only a few years ago required the physical presence of an office. These days all the office data required fits into a device that fits into the palm of a hand. Through miniaturized hardware that packs a processor, speakers, a camera, a GPS receiver, a Wi-Fi adapter and a high definition touch-sensitive screen into a cell-phone-sized device, a smartphone puts all of this functionality into your pocket (Jung, 2017). With the expansion and tightened security of cloud

computing there is no need to set foot inside an office for days at a time. For business personal that spend a lot of time on the road this save time and money. According to Connick (2016), thanks to a smartphone, you can make use of time that would otherwise be wasted while standing in line or waiting in someone's office. Over 45 percent of all businesses in the U. S. utilize remote employee – someone who is not at a specific work site at all hours of the day (Storch, 2014). Recently more and more leaders in business have offered the opportunity for their workers to work outside of the traditional confines of an office. Work can now be wherever an individual feels most comfortable and inspired, be it the bedroom, beach or a boardroom. This may not always be an ideal situation though since as Abbott (2016) points out ;

Running a business from a smartphone, and shunning the typical office-based nine to five roles, can mean being 'on call' 24/7 and rarely having the opportunity to unplug and switch off from the stresses and strains that inevitably come with being a business leader.

4. Tourism

Possibly one of the greatest areas to see benefits has been the tourism industry. The smartphone has become fully integrated into our lives, including travel (Wang, et al, 2014). Travel is a process in which tourists leave the place where they usually live and travel to different places, interact with the objects and people in those places, and document travel memories in the formats of photos and videos (Clawson, 1963 ; Cohen, 1979 ; Tussyiadijah and Fesenmaier, 2009). The ability for the average person to make airline, hotel, or car rental reservations instantly online has been an unforeseen plus for smartphone usage. Whole companies have

sprung up through internet implementation ; Expedia, Orbit, and many others which allow for extensive searches and price comparison were not in existence a few short years ago. Applications such as Google Maps, along with specific online maps for hiking, bicycling or camping sites are tailored to user's needs. This increases the use of online travel agents, which results in a decline in the demand for traditional on-site travel agents (Cheung, 2012). With the ease of interaction online the requirement to confer face to face with a human being is becoming more and more redundant.

5. E-commerce

The use of smartphones for ordering goods online continues to increase. E-commerce, a word that didn't even exist a few years ago is now growing into the way individuals are doing a large majority of their shopping. The boon in online shopping through smartphone use is especially keen in Asia. An increasing number of Southeast Asian people are relying on digital means to purchase products and services, helping the region's internet economy balloon to more than \$50 billion, according to a report by Bain & Co (Lee, 2017). China has become the e-commerce center of the world, with almost half of all online shopping carried out on smartphones (Wilson, 2016). The dramatic rise in online and mobile activity points to a Chinese consumer who is increasingly sophisticated, influential and hungry for information. The average consumer also has a higher propensity to spend, and expects to be able to shop for a greater variety of products (Qian, 2016). Smartphones and tablets are bringing more people to the online retail party (Siwicki, 2013). Future online sales.



(Image from Kemp, 2017)

6. Health Science

The health science area is another domain where smartphone acceptance has had a decisive impact on user's lives. It seems that all the big mobility players are making moves into smartphone health care, with Microsoft also recognizing the importance of mobile phone-based medical services (Spencer, 2015). Smartphones continue to evolve depending on user needs—from receiving or making calls, receiving or sending email and text messages, to mapping the location of a medical provider or hospital, searching for medical information, and even sending data from a medical device over short distances (Wilson, N. D.). The possibilities for digital tools in addressing health literacy are endless (Albaiti, 2017).

In the health sciences, smartphones have become a widely used source of information. The accelerometer is often used to measure and recognize physical and biological activity; this data is combined with data from the gyroscope and the magnetometer to get an even more accurate estimate of one's physical activities. Heart rate monitoring, fall detection of the elderly and

measuring sedentary time are just a few examples of other measurements now gathered by smartphones (Stoop, 2017)

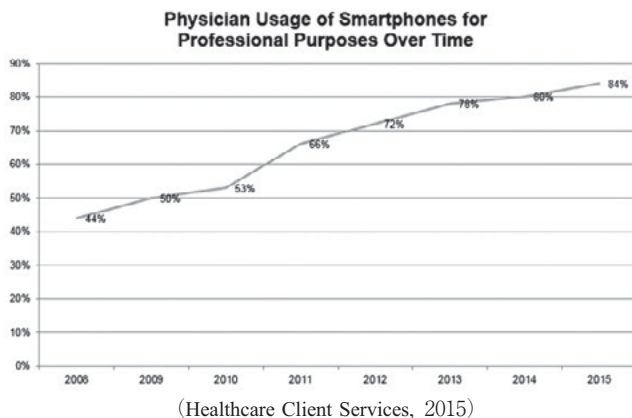
Patients as well as doctors and other health care workers can tap into the vast amount of resources and information available on the World Wide Web. On a global scale, smartphones can also be utilized to collect data on the world around with eventual use for future science.

6.1 Healthcare

At the top of the healthcare chain is that of doctors. Their acceptance in the health care field has been increasing ever since the introduction of smartphones began. Mobile health apps allow providers convenient access to health-related content to facilitate decision-making (Neese, 2016). According to Healthcare Client Services (2015), while at first doctors embraced tablet computers, more recently the trend has been toward the smaller smartphones.

Six years ago, only half of doctors used these devices for work, but now almost all use smartphones. This year the number of physicians using smartphones has increased 5%. Physicians age 60+ have increased their smartphone usage from 64% to 73% in the past year. Additionally, 93% of physicians use a smartphone in some manner, either professional or personal. This number is up from 88% a year ago.

The chart below shows the dramatic increase of smartphone use over the prior eight years by physicians.



What this means for patients is still being considered and scrutinized. Smartphones do allow far more individualized and immediate care by a physician or nurse. Retrieval of vital information and records can also be easily observable. This can mean better care possibly without even visiting a hospital or the physical attendance of a doctor. Self-monitoring of diseases or serious conditions can set off alarms to medical staff whether they are at the healthcare facility or at home. This can mean quicker response times for nurses and other caregivers.

The security and ethical issues of receiving and sending of patient information has been under scrutiny for some time now. The amount of data stored by healthcare facilities that does not relate to patient care—such as financial records, can be tempting targets for cybercriminals. According to the Ponemon Institute (2015) ;

We calculated a 125 percent growth in these attacks over the last five years—a huge net change in any study. Employee negligence and lost or stolen devices still result in many data breaches, according to the findings. However, one of

the trends we are seeing is a shift of data breaches – from accidental to intentional – as criminals are increasingly targeting and exploiting healthcare data. Cyber criminals recognize two critical facts about the healthcare industry : 1) healthcare organizations manage a treasure trove of financially lucrative personal information and 2) they do not have the resources, processes, and technologies to prevent and detect attacks and adequately protect healthcare data.

Like many fields of occupation, the healthcare industry involves more and more outsourced workers who may have numerous workstations.

Many healthcare organizations have employees who are not regularly connected to the corporate network – doctors who have privileges at multiple hospitals, “road warrior” home healthcare nurses, remote workers, telecommuters, or those who bring work home with them on their laptops. If those laptops are not connected to the VPN when a scan is happening, they are not scanned. Many of those laptops could be compromised, especially if these healthcare workers are conducting personal activity on them – directly exposing the laptops to malware and other types of threats (Collis, 2015).

Thusly, as with all sensitive data regardless of where or how it is being managed a strong security system must be in place. Keeping sensitive information secure from theft and vulnerability in today’s digital world isn’t as easy as putting a lock on the file cabinet - especially with the widespread adoption of cloud computing (Lord, 2017).

7. Law Enforcement

In the field of police work, smartphones with all its capacity to store large amounts of data can tend to be seen as Big Brother or just a friendly observer. For potential victims of crime, the clearer reception of a smartphone over that of traditional phones has allowed emergency staff to gather important information before an officer even arrives on the scene. Smartphones have the additional benefit of helping officers communicate with the public without being stuck in their offices. For example, an officer could speak to a witness about an ongoing investigation while on patrol (Lee, 2017).

Social networking rapidly has become a valuable intelligence-gathering tool for law enforcement agencies, as well as a source of evidence for defense and prosecution personnel who search Facebook pages, Twitter feeds or YouTube videos seeking to discredit witnesses, establish law enforcement bias, track down evidence or establish associations between gang members (Hanson, 2011).

In New York City, all police officers are being issued smartphones as part of their police equipment. This allows instant access for law enforcement to many of the same features that law breakers may be using to perpetrate crime.

The phones, which will be linked directly to the mainframe computers at One Police Plaza, will allow NYPD brass to share important breaking information with more than 35,000 cops with the push of a button, getting out details of events as they unfold at home and abroad, authorities said (“NYPD New Phones”, 2015).

Likewise, other law organizations are utilizing mobile devices in police work, such as evidence gathering, recording witness statements, accessing surveillance cameras and many others. Community policing today has also expanded through social networking to locate missing children, alert neighbors of suspicious activity and even inform the public about crimes committed in their neighborhoods (Hanson, 2011).

The handy photo feature has assisted as well as frustrated officers with the smartphone ability to take clear pictures of individuals close. Many lawbreakers have been photographed in the act and reported to police. Their clear act of unlawfulness can be used as evidence in a future court of law. Likewise, law enforcers have also been photographed assaulting, shooting or even killing innocent victims. The same camera feature proclaiming their misdeeds for appropriate punishment. Police misconduct has become more and more of a visible issue thanks in part to smartphone photo and video recording capabilities.

8. Agriculture

While most people think of agriculture as farming and fishing to acquire the basic food type for existence, this can also cover the management of natural resources such as crop or water management. Throughout the world, and especially in the less developed nations that depend significantly on crop harvest to supply food for a sizable percentage of their populous, smartphones are a smart way to go. For both agricultural supply and demand, mobile phones can reduce waste, make delivery more efficient, and forge closer links between farmers and consumers (Qiang, et. al., 2012). This technology has provided new opportunities for rural farmers to obtain knowledge and information about agricultural issues, problems and its usage for the development of agriculture (Chhachhar & Hassan, 2013).

Similarly, use of ICTs in agricultural extension services especially mobile phone services in the agricultural sector has provided information on market, weather, transport and agricultural techniques to contact with concern agencies and department (Aker, 2011).

9. Education

While initially there has been much hesitation on the part of learning institutions to allow smartphones to become a part of mainstream learning, mobile devices are now becoming more and more a part of the core curriculum. Students today don't expect to learn and be taught with the methods of yesteryear (Carley, 2014). Where smartphones were once only viewed as a nuisance by instructors they are now being an advantage for extended learning, Smartphones are compelling tools in the hands of students and savvy educators, and they will only become more so over time (Bentley, 2017). Their presence is known, the computing abilities of smartphones is understood, but are they really a help or a hindrance in classrooms ?

On the one hand, we know that most students bring a mini-supercomputer to school every day, a device with vast potential for learning. On the other hand, just how and even if smartphones might help students learn remains a troubling question. It's especially vexing with regard to students who already have low achievement levels or learning problems (Barnwell, 2017).

Because mobile computing devices and social media are still rather new and evolving, research has tended to focus on evaluating the effectiveness of implementing mobile computing devices (Wu et al., 2012). Continuous research on mobile learning and social media can determine if a true impact is being made on

an instructor's teaching and the student's learning (Gikas & Grant, 2013).

The freedom and availability to learn and access data has always been a strong point of using smartphones and other mobile devices. Mobile devices allow learners to access content and communicate with classmates and instructors, no matter where they are (Cavus, Bicen, & Akcil, 2008 ; Shuler, 2009). These activities support the focus on the importance of social media in which the learners are creating user generated content (Agichtein, Castillo, Donato, Gionis, & Mishne, 2008). For example, user generated content allows for collaborative activities like the use of wikis, blogs, and even social bookmarking tools (Gikas & Grant, 2013). Technology has most recently allowed learners to 'learn when they want'. Students can be tuned into a classroom lesson or tuned out while they watch a YouTube video.

Instructors need to use pedagogy and curriculum to integrate the technology into learning. Doing so will assist students in formal and informal learning opportunities, as learning does not stop when the student leaves the classroom. In essence, it can be argued, that with the availability of mobile devices and collaborative, social media tools, student learning begins after leaving the classroom when students can collaborate with peers and interact with their surroundings (Gikas & Grant, 2013).

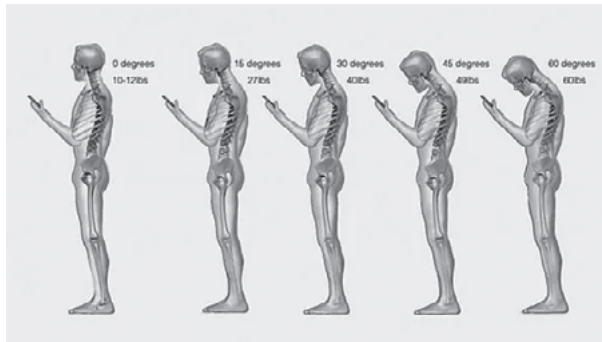
Precise uses for smartphones has the potential to differ just as much as texts (or lack of) may vary between instructors. A major betterment with regards to mobile devices in general is the ability to 'go green' and forego the implementation of paper. All the course curriculum, assignments, tasks, and anything to do with a specific course can be uploaded on line for student access. Additionally, students can interact with fellow learners or contact the instructor if

need be, all through wireless and paperless means. Any instructor can succeed in going green (Carley, 2013). Students on sick leave or with health issues, or miss school for other reasons would be able to attend class through their Smartphone and keep up with their work, rather than falling behind due to unanticipated circumstances (Sarwar & Soomro, 2013). A major plus for wireless internet usage in the classroom is the environmentally friendly atmosphere that smartphones can generate.

10. Health Risks

Smartphone usage has been found to have some adverse effects though, in recent years as the extensive use of smartphones has become a constant 24/7 practice some physicians have begun to question the health risks. Young people in particular, have embraced the use of smartphones. 15% of Americans ages 18-29 are heavily dependent on a smartphone for online access (Smith, 2015). It has been found that female college students spend an average of ten hours a day on their cellphones, surfing the internet and sending 100+ messages. That's more time than spent with friends (Leonard, 2015).

According to the British Chiropractic Association, our obsession with smartphones has led to a rise in the number of young people with back problems, as the amount of time spent leaning over small phone screens can put spinal discs under pressure. Thanks to our technological lifestyle, 45 per cent of 16 to 24-year-olds suffer from back pain – a 60 per cent rise from last year (Goldhill, 2015).



Bending your neck to peer at your screen is known as “text neck” syndrome
(Image from the Telegraph, Goldhill, 2015)

Complaints from smartphone users vary widely depending on amount of usage and how they are used. Some individuals, peer closely into their phones, others hunched over for prolonged periods of time, while others due to the features that they are utilizing may suffer hearing, wrist and finger strains, in addition to many others.

Another recent issue associated with mental health is that of isolation and depression that some individuals are experiencing while being constantly connected to social media networks. Research on their usage have shown addictive behavior to set in though with long term use.

Addictions are chronic relapsing health conditions associated with many negative consequences at individual and population levels. These include, but are not limited to, higher morbidity and mortality rates for the addicted person, health and financial damages for family or community members, and increased economic and social costs for society as a whole (Effertz & Mann, 2013 ; McGinnis & Foege, 1999 ; Single, Robson, Xie, & Rehm, 1998).

The near-universal access to digital technology, starting at ever-younger ages, is transforming modern society in ways that can have negative effects on physical and mental health, neurological development and personal relationships, not to mention safety on our roads and sidewalks (Brody, 2017). Smartphone practices similar to long term television viewing (Koo, 2013, Sussman & Moran, 2013), online gaming (Hellman, et al, 2012), and many other behaviors ; it doesn't seem like a smart idea to use mobile devices for extended periods of time especially day after day.

Researchers have recently discovered that even the mere presence of a smartphone nearby can produce harmful effects on our cognitive abilities. The constant presence of a mobile phone has a “brain drain” effect that significantly reduces people's intelligence and attention spans, a study has found (McGoogan & Titcomb, 2017).

Results from two experiments indicate that even when people are successful at maintaining sustained attention – as when avoiding the temptation to check their phones – the mere presence of these devices reduces available cognitive capacity. Moreover, these cognitive costs are highest for those highest in smartphone dependence (Ward, et. al., 2017).

The downside to the extensive use of smartphones to do our thinking is that there may be a time when people forget how to think. This is already happening too often with niceties such as spellcheck or instant language translations. There is no longer a real need or urge to learn spelling, pronunciation or many other things when something can be researched on the Web in less time than it takes to write down a word or sentence on paper. Technology may or may not be a good thing in human being lives. If the full effect is that people are actually become dumber by

utilizing ‘smart’ phones then in some ways this seems nothing more than a cruel joke that people in the hereafter will not even realized has happened.

11. Conclusion

In the very near future, a smartphone will most likely be the one and only computing device an individual owns. More than half the world now uses a smartphone (Kemp, 2017). Gone are the days of, 8-tracks and cassettes for music, so it will be for computing. The desk top style of computing is rapidly being replaced by tablet computing devices while at the same time tablets are being phased out by the smartphones. This was not always so but the amount of computing and storage capabilities that are being built in to smartphone is beginning to equal and outdistance the computers that first introduced us to the Internet. Mobile communications technology has quickly become the world’s most common way of transmitting voice, data, and services in the developing world (Qiang, et. al., 2012). Southeast Asia is said to be one of the most mobile-centric regions in the world with countries like Singapore leading the way on smartphone penetration, and others like Indonesia and Thailand leapfrogging desktop PCs altogether (Wilson, 2016).

Smartphones are used for much more than calling, texting, or basic internet browsing. Users are turning to these mobile devices as they navigate a wide range of life events (Smith, 2015). We’re at the point where anyone armed with a current model smartphone or tablet can handle almost all of them at-home – and even at-work – tasks without needing anything else (Bonnington, 2015). With no clear evidence to guide our understanding of the overall impact of the Internet on our lives, society has forged ahead embracing the role of technology by expanding our opportunities for social communication, and more specifically our need for

immediacy (Lundquist, et al, 2014).

What is true though, is the profound effect smartphone and mobile technology in general is currently having on individual lives the world over. Their popularity and affordability means that almost anyone from Afghanistan to Zimbabwe can acquire mobile technology and as is more and more frequently the case, receive/send text and so much more, in their native language. If they are unable to understand users can now access one of the language translation apps. The information highway is open and travelers are rushing along to destinations unknown.

From an individual perspective to a more national and global outlook smartphones are altering the ways we do business, buy goods and services, seek medical attention and interact with family members or colleagues. Besides communication, we have available a vast variety of apps that can make your daily life a lot easier, with only our mobile devices we can read books, listen to music, take pictures, watch videos, play games, create documents, store data and much more (Jines, 2015). Medical care, law enforcement, and even education is connecting to the internet to access pertinent information. The results offer fast answers to an ever-quickenning society.

The down side to the constant transferring of information for health care, business or merely personal enjoyment is that there can be negative effects on our brains. Researchers are becoming more and more aware of this fact and are attempting to advance this discovery to the public. Unfortunately, due to persistent interaction with their devices no one may notice or heed the advice. Future generations may suffer considerable side effects from the disregard taken by those of us who were around when smartphones were first introduced. If adoption rates and the always-on lifestyle continue unabated through 2020, respondents suggest future generations will have different priorities about what they choose to remember (Philips, 2014). As Arthur C. Clarke, author of over 50 books including 2001 : A

Space Odyssey, once stated

“Before you become too entranced with gorgeous gadgets and mesmerizing video displays, let me remind you that information is not knowledge, knowledge is not wisdom, and wisdom is not foresight. Each grows out of the other, and we need them all.”

Smartphones can truly be called smart if the individual users and society as a whole display a little intelligence with regards to their operation and performance.

References

- Abachi, H. R. & Muhammad, G. (2013). The impact of m-learning technology on students and educators. *Computers in Human Behavior*, 30, 491-496. doi : 10.1016/j.chb.2013.06.018.
- Abo-Jedi, A. (2008). Cell phone addiction and its relation to self-closure in a sample of Jordanian university and Amman private university students. *The Jordanian Journal for Educational Sciences*, 4, 137-150.
- Agichtein, E., Castillo, C., Donato, D., Gionis, A. & Mishne, G. (2008). Finding high quality content in social media. *Proceedings of the International Conference on WebSearch and Web Data Mining*, New York, New York. Retrieved from : <http://www.mathcs.emory.edu/~eugene/papers/wsdm2008quality.pdf>
- Aker, J. C. (2011). Dial “A” for agriculture : a review of information and communication technologies for agricultural extension in developing countries. *Agricultural Economics*, 42(6), 631-647.
- Albaiti, A. (2017). How smartphones can actually be good for your health. *STAT*. Boston Globe Media. Retrieved from : <https://www.statnews.com/about/>
- Aljommaa, S. S., Qudah, M. F. A., Albursan, I. S., Bakhiet, S. F. & Abduljabbar, A. S. (2015). Smartphone Addiction among University Students in the Light of Some Variables. *Computers in Human Behavior*, 61(2015), 155-164.
- Angelides, M. C. (1997). Implementing the Internet for business : A global marketing opportunity. *International Journal of Information Management*, 17, 405-419. doi : 10.1016/S0268-4012(97)00024-8.

- Barnhill, P. (2017). Do Smartphones Have a Place in the Classroom ? The Atlantic. Education. April 27, 2016. Retrieved from : <https://www.theatlantic.com/education/archive/2016/04/do-smartphones-have-a-place-in-the-classroom/480231/>
- Bentley, K. (2017). 9 Uses for Smartphones in the Classroom. Centre for Digital Education. Retrieved from : <http://www.centerdigitaled.com/blog/cellphones-in-classrooms-part-2.html>
- Bonnington, C. (2015). In Less than two Years, a Smartphone Could be your only Computer. Retrieved from : <https://www.wired.com/2015/02/smartphone-only-computer/>
- Bosomworth, Daniel. (2015). “Mobile Marketing Statistics 2015.” Smart Insights. <http://www.smartinsights.com/mobile-marketing/mobile-marketing-analytics/mobile-marketingstatistics/>
- Brody, J. E. (2017). How smartphone addiction is affecting our physical and mental health. The Seattle Times. Life. Wellness. Retrieved from : <http://www.seattletimes.com/life/wellness/how-smartphone-addiction-is-affecting-our-physical-and-mental-health/>
- Carley, H. F. (2016). Internet Accessibility & Download Speeds : Unseen Effect on Global Education. COSGA (2nd Conference on the Social Sciences, Sociology and Globalization in Asia) Fukuoka, Japan. pp.38-45.
- Carley, H. F. (2014). Going Green : The Paperless Classroom. In Global Issues in Languages Education. Hokkaido JALT Newsletter Issue #91. April 2014. pp.10-13.
- Carley, H. F. (2013). How Going Green needs not Leave Instructors Red with Rage in a Paperless Classroom. In : Reinelt, R. (ed.) (2013) Stages of Foreign Language Learning. Rudolf Reinelt Research Laboratory EU Matsuyama, Japan. Vol. 8, pp.59-69.
- Cavus, N., Bicen, H. & Akcil, U. (2008). The opinions of information technology students on using mobile learning. Paper presented at the International Conferences on Educational Sciences. Magosa, North Cyprus : Eastern Mediterranean University.
- Cheung, W. (2012). Trends in Travel Technology. The Atrium. University of Guelph. Retrieved from : <https://atrium.lib.uoguelph.ca/xmlui/handle/10214/3696>
- Chhachhar, A. R. & Hassan, M. S. HJ. (2013). The Use of Mobile Phone Among Farmers for Agricultural Development. International Journal of Scientific Research. July. DOI : 10.15373/22778179/JUNE2013/31.
- Clawson, M. (1963). Land and Water for Recreation : Opportunities, Problems and Policies. Chicago : Rand Mc Nally.
- Cohen, E. (1979). A Phenomenology of Tourist Experiences. Harper Perennial.
- Collis, J. (2015). Securing Portable Devices and Sensitive Data in Healthcare. Otenable. Retrieved from : <https://www.tenable.com/blog/securing-portable-devices-and-sensitive-data-in-healthcare>
- Connick, W. (2016). Business Uses for a Smartphone. How Salespeople can benefit from Company Smartphones. The Balance. Retrieved from : <https://www.thebalance.com/business->

- uses-for-a-smartphone-2917507
- Cox, J. (2017). Smartphone demand hits fresh record for the second quarter of 2017. Independent. Business News, July, 25th, 2017. Retrieved from : <http://www.independent.co.uk/news/business/news/smartphone-demand-sales-q2-2017-records-second-quarter-technology-a7856421.html>
- “Criminal Attacks” (2015). Criminal Attacks : The New Leading Cause of Data Breach in Healthcare. Ponemon Institute. Retrieved from : <http://www.ponemon.org/blog/criminal-attacks-the-new-leading-cause-of-data-breach-in-healthcare>
- Dogtiev, A. (2015). App Usage Statistics : 2015 Roundup. Business of Apps. December 14th, 2015. Retrieved from : <http://www.businessofapps.com/app-usage-statistics-2015/>
- Effertz T., Mann K. (2013). The burden and cost of disorders of the brain in Europe with the inclusion of harmful alcohol use and nicotine addiction. European Neuropsychopharmacology, 23 (7), 742-748. doi : 10.1016/j.euroneuro.2012.07.010
- Gikas, J. & Grant, M. M. (2013). Mobile computing devices in higher education : student perspectives on learning with cellphones, smartphones & social media. Internet and Higher Education, 19 (2013), pp. 18-26. Retrieved from : http://s3.amazonaws.com/academia.edu.documents/38919269/gikas_grant_mobile_devices.pdf?AWSAccessKeyId=AKIAIWOWYYGZ2Y53UL3A&Expires=1501158356&Signature=MyZ8qCEjgRO3Hq5C%2FUIRghcWomI%3D&response-content-disposition=inline%3B%20filename%3DMobile_Computing_Devices_in_Higher_Educa.pdf
- Goldhill, O. (2015). Why smartphones are making you ill. The Telegraph. Technology News. Retrieved from : <http://www.telegraph.co.uk/technology/news/11532428/Why-smartphones-are-making-you-ill.html>
- Hanson, W. (2011). How Social Media is Changing Law Enforcement. Social media raises positive and negative issues for police. Government Technology, Justice and Public Safety. Retrieved from : <http://www.govtech.com/public-safety/How-Social-Media-Is-Changing-Law-Enforcement.html>
- Healthcare Clinical Services (2015). Professional Usage of Smartphones by Doctors in 2015. Kantar Media. Retrieved from : <http://www.kantarmedia.com/us/thinking-and-resources/blog/professional-usage-of-smartphones-by-doctors-in-2015>
- Hellman, M., Schoenmakers, T. M., Nordstrom, B. R. & van Holst, R. J. (2012). Is there such a thing as online video game addiction? A cross-disciplinary review. Addiction Research & Theory. Volume 21, 2013-Issue 2.
- Jines, L. (2015). The Effects of Mobile Technology on our Society. Retrieved from : <https://www.linkedin.com/pulse/effects-mobile-technology-our-society-leonardo-jines>
- Jung, B. (2017). What are the benefits of Smartphone Technology? Retrieved from : <http://smallbusiness.chron.com/benefits-smartphone-technology-57037.html>

- Kemp, S. (2017). Digital in 2017, Global Overview. We are Social. Special Report. Retrieved from : <https://wearesocial.com/special-reports/digital-in-2017-global-overview>
- Koo, HY. (2013). Effects of a Prevention Program for Media Addiction on Television, Addiction, Cellular Addiction, and Impulsiveness in Elementary School Students. *Child Health Nursing Res.* 2013 Oct ; 19(4) : 270-281. Korean.
- Lasco, G. (2015). The smartphone as status symbol. *Inquirer. Net.* Philippine Daily Inquirer. Retrieved from : <http://opinion.inquirer.net/89605/the-smartphone-as-status-symbol>
- Lee, A. (2017). Smartphones improve law enforcement officers' efficiency. *The Daily Universe.* Retrieved from : <http://universe.byu.edu/2017/04/10/smartphones-improve-law-enforcement-officers-efficiency1/>
- Lee, J. (2017). Southeast Asia digital consumer market to hit \$50 bn in 2017 : report. *Nikkei Asian Review.* May 22nd, 2017. Retrieved from : <https://asia.nikkei.com/Business/Consumers/Southeast-Asia-digital-consumer-market-to-hit-50-bn-in-2017-report>
- Leonard, J. (2015). 16 Seriously Damaging Side Effects of Your Smartphone Addiction. *Natural Living Ideas.* Retrieved from : <http://www.naturallivingideas.com/16-seriously-damaging-side-effects-of-your-smartphone-addiction/>
- Lipschultz, D. (2000, April). On reinventing entertainment. *Internet World*, 6(7), 72-84.
- Lord, N. (2017). An Expert Guide to Securing Sensitive Data : 34 Experts Reveal the Biggest Mistakes Companies Make with Data Security. Retrieved from : *Digital Guardian.* <https://digitalguardian.com/blog/expert-guide-securing-sensitive-data-34-experts-reveal-biggest-mistakes-companies-make-data>
- Lundquist, A. R., Lefebvre, E. J. & Garramone, S. J. (2014). Smartphone : Fulfilling the Need for Immediacy in Everyday Life, but at What Cost? *International Journal of Humanities and Social Science.* Vol. 4, No. 2, Special Issue – January 2014. Retrieved from : https://www.researchgate.net/profile/Arlene_Lundquist/publication/277249094_Smartphones_Fulfilling_the_Need_for_Immediacy_in_Everyday_Life_but_at_What_Cost/links/5564fba008acc4b0f4859572.pdf
- McGinnis J. M., Foege W. H. (1999). Mortality and morbidity attributable to use of addictive substances in the United States. *Proceedings of the Association of American Physicians*, 111 (2), 109-118. doi : 10.1046/j.1525-1381.1999.09256.x
- Molyneux, L. (2017). Mobile News Consumption, a Habit of Snacking. *Digital Journalism.* <http://dx.doi.org/10.1080/21670811.2017.1334567>
- Neese, B. (2016). Ethical Issues in Nursing : The Impact of Smartphones on Patient Care. *Alvernia University Online.* Retrieved from : <https://online.alvernia.edu/ethical-issues-nursing/>
- “NYPD’s New Phones” (2015). NYPD’s New Phones will be ‘on the go’ Crime Labs. *Police, the law enforcement magazine. Technology.* Retrieved from : <http://www.policemag.com/channel/>

- technology/news/2015/11/17/nypd-s-new-phones-will-be-on-the-go-crime-labs.aspx
- Pegrum, M. (2014). Mobile Learning, Language, Literacies, and Cultures. *New Language Learning and Teaching Environments. The Mobile Landscape*, p. 4. Palgrave Macmillan Publishers.
- Pew Research Center (2015). Some Features are Popular with a Broad Spectrum of Smartphone Owners ; Social Networking, Watching Video, and Music/Podcasts are Especially Popular Among Young Users. *U. S. Smartphone use in 2015. Internet & Technology*. March 31st, 2015. Retrieved from : http://www.pewinternet.org/2015/04/01/us-smartphone-use-in-2015/pi_2015-04-01_smartphones_05/
- Philips, C. (2014). How smartphones revolutionized society in less than a decade. *Gt – government technology. Chattanooga Times*. November 20th, 2014. Retrieved from : <http://www.govtech.com/products/How-Smartphones-Revolutionized-Society-in-Less-than-a-Decade.html>
- Qiang, C. Z., Kuek, S. C., Dymond, A. & Esselaar, S. (2012). *Mobile Applications for Agriculture and Rural Development*. ICT Sector Unit, World Bank. Retrieved from : http://siteresources.worldbank.org/INFORMATIONANDCOMMUNICATIONANDTECHNOLOGIES/Resources/Mobile_Applications_for_ARDV8.pdf
- Qian, J. (2016). *China's Connected Consumers 2016, a Mobile Evolution*. Retrieved from : <https://assets.kpmg.com/content/dam/kpmg/cn/pdf/en/2016/11/china-s-connected-consumer-2016.pdf>
- Sarwar, M. & Soomro, T. R. (2013). Impact of Smartphones on Society. *European Journal of Scientific Research* ISSN 1450-216X/1450-202X Vol. 98 No 2, March 2013, pp. 216-226.
- Shuler, C. (2009). *Pockets of potential : Using mobile technologies to promote children's learning*. New York : The Joan Ganz Cooney Center at Sesame Workshop.
- Single E., Robson L., Xie X., Rehm J. (1998). The economic costs of alcohol, tobacco and illicit drugs in Canada, 1992. *Addiction*, 93(7), 991-1006. doi : 10.1046/j.1360-0443.1998.9379914.x
- Siwicki, B. (2013). Online Shopping Becomes Increasingly Mobile. *Digital Commerce 360. Internet Retailer*. Retrieved from : <https://www.digitalcommerce360.com/2013/05/15/online-shopping-becomes-increasingly-mobile/>
- Smith, A. (2015). *U. S. Smartphone Use in 2015*. Pew Research Center, *Internet & Technology*. Retrieved from : <http://www.pewinternet.org/2015/04/01/us-smartphone-use-in-2015/>
- Spencer, L. (2015). The rapid rise of smartphone health care. *ZDNet*. Retrieved from : <http://www.zdnet.com/article/the-rapid-rise-of-smartphone-health-care/>
- Stoop, J. (2017). *New ways to use smartphones for science*. Elsevier. Retrieved from : <https://www.elsevier.com/connect/new-ways-to-use-smartphones-for-science>
- Storch, K. (2014). 5 Unexpected Ways Businesses can use Smartphones to Drive Profit. *Sales &*

- Marketing Management. Retrieved from : <https://salesandmarketing.com/content/5-unexpected-ways-businesses-can-use-smartphones-drive-profit>
- Sussman, S. & Moran, M. B. (2013). Hidden Addiction : Television. *Journal of Behavioral Addictions*. Volume 2, Issue 3. DOI : 10.1556/JBA.2.2013.008.
- Tussyadiah, I. P. & D. R. Fesenmaier (2009). “Mediating tourist experiences : Access to places via shared videos.” *Annals of Tourism Research*, 36(1) : 24-40.
- Wang, D. Xiang, Z. & Fesenmaier, D. R. (2014). Smartphone Use in Everyday Life and Travel. *Journal of Travel Research*, 2016, Vol. 55(1). pp. 52-63. Retrieved from : <http://journals.sagepub.com/doi/pdf/10.1177/0047287514535847>
- Ward, A. F., Duke, K., Gneezy, A. & Bos, M. W. (2017). Brain Drain : The Mere Presence of One’s Own Smartphone Reduces Available Cognitive Capacity. *Journal of the Association for Consumer Research*, 2017 ; 2(2) : 140 DOI : 10.1086/691462
- Wilson, G. M. (N. D). The good, the Bad, and the Ugly of Smartphone Usage in Healthcare. *Master of Health Administration, Alumni Newsletter*.
- Wilson, K. (2016). Smartphones drive e-commerce explosion. *China Daily Asia*. Friday, June 10th, 2016. Retrieved from : http://www.chinadailyasia.com/asiaweekly/2016-06/10/content_15447216.html
- Wu, W., Wu, Y. J., Chen, C., Kao, H., Lin, C. & Huang, S. (2012). Review of trends from mobile learning studies : A meta-analysis. *Computers in Education*, 59(2), 817-827.