Learning in the Digital Age

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Introduction

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modified image from https://www.blackillustrations.com/

This book is a work in progress; and I hope it remains that way in perpetuity. This book is a minor attempt to contribute to the vast repository of Open Educational Resources. It is aimed to serve as a textbook for classes exploring the nature of learning in the digital age. The genesis of this book is a desire to use OERs in all my teachings, coupled with the realization that the resources that I was looking for were not available and as such I needed to contribute in creating them.

In August 2015 I began teaching a course called learning in the digital age at Oklahoma state university. I inherited the course which has been part of the educational technology program. Broadly, the aim is to expose students to research, theory, and practice to build a foundational understanding of digital learning. The focus is specifically on how technology, influences, mitigate, and support learning practices and processes.

Over the years many themes have emerged. For example, one of the assignment 'my life without,' the students comment on a technology they could not live without. A common theme that emerges is the value we placed on mobile devices. Not surprisingly most of us cannot imagine life without smartphones, tablets, etc. Yet, in education we tend to deny our learners the very tool that we find hard to live without. This brought up questions on If mobile devices/social media are crucial, why then do we not make most of them in our teaching and learning practices? Other questions that inevitably follow are: what happens to those who cannot access the tools necessary to learn in the digital age? Do we just leave them behind? How about the adult learners who feel intimidated by the tools?

When discussing learning in the digital age, most focus on the technology first. However, the emphasis made in this book and the class is that it's about the learner not just the technology. One of the things that is easy to lose track of when talking about learning in the digital age is the learner. Technology is important and it has significant impact but it is still about the person who is

using the technology. Many people conflate learning in the digital age with technology in today's age. This important misconception is common and results from our failure to examine our understanding of what "learning" really is. Of course, Most of this depends on a person's epistemology. There are numerous definitions of what learning is and often they come to how a person sees the world. Some argue that learning is about a change in behavior due to experiences, others state simply that learning is being able to do something new that you were not able to do before. Regardless of what side you choose, to understand what learning in the digital age is, one has to understand what learning itself is.

As I said at the beginning, this book is a work in progress; and I hope it remains that way in perpetuity. This means that the chapters in the book are not designed to be the final note on any issues (not sure if any text is ever finite). The chapters in this book are varied, covering topics from games, digital divide, finance, proctoring and many others. The authors where given freedom to interpret what learning in the digital age means to them and to cover topics that they believe relate to the topic. The hope is that the reader gets ideas from the text and contributes their voice in terms of suggestions or their own chapters. This is only the first version, with more chapters to come. I hope further editions will continue to add to the repository of OERs and our understanding of Learning in the digital Age.

I am immensely thankful to the authors for sharing their ideas freely and for the reviewers who volunteered their time to give feedback.

This resource has also been selected and included in:
LibreTexts Social Sciences

Open Textbook Library

OpenOKState Student Privacy Guidelines

OpenOKState and the OSU Libraries Library Teaching and Learning (T&L) Team* strive to enable engaging learning experiences for students using a variety of digital resources**. When you—the student—use these resources, you're likely to produce some data, such as data about how you used the resources (e.g., what you clicked on) or the content you produced while using the resources (e.g., answering a question).

In line with our values and our beliefs about student data privacy, our T&L team has created and closely follows a set of guidelines, made up of 5 core principles, for any type of student data we might come in contact with.

We aim to be exceedingly transparent with you about your data. On this page, you can learn about our team's values and beliefs regarding student data privacy as well as explore the 5 core principles of our Student Data Privacy Guidelines.

If you have any questions about these guidelines or about your data privacy, please don't hesitate to contact the Director of Library Teaching and Learning, Holly Reiter, at holly.reiter@okstate.edu.

*The data and Guidelines referenced on this page are unique to Library Teaching & Learning, and do not indicate guidelines for the Library or the University as a whole.

**For our purposes, digital learning objects include interactive

tutorials, OStateTV or YouTube videos, the mobile Library Scavenger Hunt, visits to web pages that host these items, Pressbooks, and graduate student workshop registration.

VALUES AND BELIEFS

VALUES

Our Library Teaching and Learning team values:

- Prioritizing student needs and welfare
- Restoring and protecting equity and assisting students in doing the same
- Incorporating student voice and experiences and using it to shape our practice
- Providing "digital sanctuaries," or digital environments that prioritize and promote student safety

STUDENT DATA PRIVACY BELIEFS

As a Teaching and Learning team, we have foundational, ethical, scholarship-shaped beliefs about student data that have shaped our student data practice and guidelines.

We believe in prioritizing student data privacy to...

- Protect students
- Respect student autonomy
- Return power to students and establish equity
- Protect students' intellectual freedom
- Build trust between students and Library Teaching and Learning

- Enable student data privacy literacy

CORE PRINCIPLES OF STUDENT DATA PRIVACY

RESPONSIBILITY

The Teaching and Learning team believes it's our ethical responsibility to protect your data privacy. Specifically, we uphold the responsibility to:

- Ensure any collected data is handled carefully, used effectively, and used only for the stated purpose.
- Prevent unauthorized disclosure, use, or collection of your data
- Follow specific steps in data collection, use, storage, and destruction.
- Carry a shared understanding of our role in your data privacy.

TRANSPARENCY

T&L believes you shouldn't have to wonder what's happening with your data, so we strive to be as open and transparent with you as possible. For each digital learning object we use, we'll share the following:

- What we are and are not collecting
- Why we're collecting it
- How it's being collected
- How it's being used
- Who has access to the data

To keep you safe, we strive to store and process all data according to best practices. We'll only collect the minimum amount of data necessary to achieve our stated objectives.

PRIVACY AND CONSENT

T&L believes that privacy is your right. We strive to honor your privacy by never releasing any personally identifiable information unless it is to your instructor of record who is using the digital learning object within their class.

Occasionally, we may share aggregates of de-identified or anonymized data internally (e.g., with Library administrators) or externally (e.g., at Library or industry conferences). We do this to continuously improve effectiveness, evaluate the effectiveness of our teaching and learning program, or to help evolve and shape the practices of our profession. Aggregating the data means that the data is in summary form and no individual student can be identified.

Finally, we will never sell or otherwise commodify your data, and will always prioritize the use of vendors and resources that do the same.

CONFIDENTIALITY AND SECURITY

T&L takes great strides to ensure that any and all data we collect is kept confidential and secure.

We use several vendors to help us create and host digital learning objects and collect analytics. Sometimes, these vendors have access to your personally identifiable information for operational purposes, so we intentionally investigate and select vendors that also prioritize confidentiality and security.

ACCESS

Sometimes we do collect and store personally identifiable information so we can do things like retain records for your instructor of record or keep track of event registrations. In these cases, T&L believes you have the right to know what that data is, request corrections if you think it's incorrect, and request that it be deleted. Please note, we'll always make every effort to honor deletion requests, but sometimes we're required to retain records for various reasons. If that's the case, we'll be open about why we can't delete it now, and if and when it can be deleted.

ACKNOWLEDGEMENTS

Library Teaching and Learning would like to acknowledge several projects that helped inform our *Guidelines*. We extend our sincerest gratitude for the effort and dedication that individuals invested in these works.

- The Open University's Student Policies and Regulations: Ethical Use of Student Data for Learning Analytics
- The JISC Code of Practice for Learning Analytics
- National Information Standards Organization's (NISO) Consensus Principles on User's Digital Privacy in Library, Publisher, and Software-Provider Systems
- Stanford CAROL & Ithaka S+R Project of Responsible Use of Student Data in Higher Education
- UC Berkeley Research, Teaching, and Learning's Learning Data Principles
- University of Hawai'i at Mānoa's Resolution Supporting Learning Data Privacy Principles and Practices

Last updated 8/10/2021 by Kathy Essmiller.

PART I

CHAPTERS

CHAPTER 1

Board games and learning: Why care in the digital age?

Board games and learning: Why care in the digital age?

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The Pennsylvania State University

Abstract. *The renaissance of board games in the digital age is sometimes attributed to the multiplication of board game channels on Youtube (Muench, 2017), or to the need to socialize and interact in person (Jolin, 2016). Today, board gameplay is not only livestreamed on platforms such as Twitch.Tv, but sites such as boardgamegeek, and gaming conventions such as Gen Con create a space for board gamers to interact and keep up with the latest happening in the board game community/industry. . Though board gameplay is breaking into mainstream, studies on the different learning spaces in the digital era are still dominated by environments enriched with digital tools such as video games (Carter, Gibbs & Harrop, 2014a). Drawing on board game literature, this chapter discusses board games and how the resurgence of these games in the 21st century may provide an opportunity to understand learning in the digital age.*

INTRODUCTION.

The rising trend of board gameplay in recent years puzzles many observers of the popular culture. In a technology-driven society, and in a time when important interactions are preferably delegated to technology (Turkle, 2012), the revival of board games (Graham, 2016) is intriguing as well as interesting. According to Euromonitor International, a global market research firm, the global sales of board games reached $9.6 billion in 2016, with board games such as Settlers of Catan selling more than $80 million in the United States (Graham, 2016). Board games are becoming for families, children, and young adults, a way to socialize and a common entertainment (Graham, 2016). Kay (2018) writes that U.S. sales of board games increased by 28% between 2016 and 2017 and will grow at a similar rate by 2020. The resurgence of board games in this age certainly denotes a need to explore the revival of board games in the United States in the era of video games. Paraphrasing James Gee, in this chapter, I interrogate board gameplay in an attempt to address the following question: what do board games have to tell us about learning in the digital age?

Oxford online dictionary defines board games as games that include the movement of counters or other objects round a board. These games are certainly different from video games because they include moving pieces on a premarked physical board (Berland & Lee, 2011). It should be noted that some board games such as *Mysterium, Songo, Oware, Through the Ages: A New Story of Civilization, and Lords of Waterdeep* have been digitized (Ekwè, 2005; Marks & Thrower, 2018). Yet, the board game renaissance is driven by children and adults (Jolin, 2016; Kay, 2018). Furthermore, the development of games such as German-style board games[1] (e.g., *Settlers of Catan* and *Pandemic*) that prioritize action and encourage the optimization of limited resources (Kapp, 2018), also explain this resurrection.

Prior to discussing the relationship between board games and

learning in the digital age, it is critical to explain that the notion of board game resurgence in this century is specific to the Western world (e.g., United States, United Kingdom, Canada, Germany). In Africa, and particularly in Cameroon, board gameplay has been a popular activity for centuries, and as such, the notion of board game resurgence in the digital age may not be applied to Africa, and specifically to Cameroon. The digital age refers to the wide use of digital technology in almost all aspects of human activities, including economic, social, and political interactions (Adomi, 2008; Wang & Torrisi-Steele, 2016). In other words, the digital age is characterized by digital technology shaping the way people live and interact (Ngelime, 2018). Though Africa has creatively embraced the digital age and can no longer be viewed as out of digital age world (Ngelime, 2018), board games have always been popular in different communities or ethnic groups (Nxumalo & Mncube, 2018).

LEARNING AND BOARD GAMES IN THE DIGITAL AGE

Despite the resurgence of board games, they are mostly researched as artifacts or objects of art , and not as spaces for learning (Bayeck, 2017; Wise, 2018). Nevertheless, some researchers have started exploring board games as learning spaces (Berland & Lee, 2012; Carter et al., 2014) to uncover their learning potential (Bayeck, 2017; Carter, Harrop & Gibbs, 2014a). Such research deviates from the long-standing tradition in game studies that conceived board games as spaces to mine for the design of digital games to enhance players' gaming experiences (Xu, Barba, Radu, Gandy & MacIntyre, 2011; Zagal, Rick & Hsi, 2006). As Carter et al. (2014b) explain:

The limited number of studies which solely focus on the attraction and experience of non-digital games presents the

possibility that without a firm foundational understanding of the [board game] game experience, and the role that the physicality of this experience plays in the enjoyment of the game (highlighted as being important), essential elements of the experience may be overlooked or diminished in digital augmentation (p. 7).

Consequently, without an examination of board gameplay, the learning experiences board games offer to players are likely to be overlooked. In the following paragraphs, I discuss few studies on board games to highlight learning occurring in board gameplay, and to point to board games as spaces for learning that is relevant in the 21st century.

In their study of Warhammer 40,000[2] (W40K) board game, Carter et al. (2014a) described players' multiple activities that evidenced critical thinking, as well as strategic thinking. For instance, players researched narratives behind each army prior to drafting their army by using external resources such as books developed by the developers of the game (Carter et al., 2014a). Players also studied the characters prior to drafting their army by using fictional books about the game, and simulated their readings during their gameplay (Carter et al., 2014a). In addition, players developed their own gameplay strategy based on their preconception of how the game will unfold (Carter et al., 2014a). I argue that W40K practices as described in Carter et al. (2014a) involved a learning process that increased gameplay experience and motivation. For example, in researching players and the different armies' narratives, players acquired research skills, while gaining more information about the characters and the armies. Playing also meant engaging in decision-making (e.g., drafting the army), and in strategic thinking as they created their own gameplay strategy (Carter et al., 2014a). Though a pastime, W40K activities engage players in learning that is pleasant and fun. Hence, the process of selecting characters, building the army, and using external resources is an illustration of players' engagement in contextualized meaning making practices, or literacy practices. Indeed, from a sociocultural perspective,

participation in practices related to the gameplay as well as interacting with others is learning (Lantolf, 2000; Nasir & Hand, 2006).

Figure 1. Warhammer 40.000 adapted from Games Workshop

Berland and Lee (2012) explored *Pandemic*[3] (Figure 2), a collaborative board game in which players team up to fight diseases and keep the world safe. The authors show that players engaged in complex computational thinking activities distributed among participants (Berland & Lee, 2012). For instance, players collaborated to understand their actions, and engaged in significant crosstalk during gameplay (Berland & Lee, 2012). Consequently, *Pandemic* created a space for players to participate in learning activities that included computational thinking practices, and collaboration. Board games are therefore useful spaces for learning and practicing skills that are important for everyday life in the digital age.

Figure 2. Pandemic adapted from Anderson (2016).

With regards to learning, it is important to also consider non-western board games. However, empirical studies of board games and learning in non-western contexts such as Africa are still extremely limited (Bayeck, 2017; Mkondiwa, 2019). Nevertheless, as mentioned earlier, the notion of resurgence of board games in the digital age cannot unquestionably be applied to Africa. Africa has a long tradition of board gameplay. Board games such as *Oware, Songo,* and *Bao* (Bayeck, 2017; BBC, 2016; Mawere, 2013) are ancient African board games that require "high degree of intelligence and vigilance when playing [them]" (Mawere, 2013, p.11). According to Mawere (2013) board gameplay constituted one of the educational strategies used in precolonial Africa. Though empirical studies on African board gameplay are practically nonexistent, description of strategic games such as *Songo*[4] (Figure 3) evidences that the gameplay involves complex thinking and strategies to outwit the adversary (Meka, 2008; Owona, 2004).

Figure 3. Songo board game adapted from Owona (2004)

Songo gameplay involves the use of proverbs as a means to demonstrate players' level of expertise, fast and complex calculations (Njock, 1985; Mbarg Owona, 2004). Building on Owona's (2004) and Njock's (1985) descriptions of the gameplay, it is clear that *Songo* gameplay involves practices that create learning opportunities for players. For instance, counting seeds/pebbles, strategizing to beat the opponent, and engaging in an exchange of proverbs (implying communication as well as language learning) are instances of learning and literacy practices embedded in this ancient African game that are relevant in the digital age. Hence, as competitiveness, strategy, and communication are critical in Songo gameplay, so are these ideas important in the digital age. Reflecting on another board game called *Tsoro*[5] (Figure 4), Mawere (2013) writes:

In fact the players have to think quickly and clearly in order to outwit the opponent. This means that the game is meant to develop and sharpen the [player's] intellectual faculty such that s/he [develops] the aptitude to manoeuvre different situations in real life. (p.11).

Figure 4. Tsoro board game adapted from http://home.kpn.nl/wasse257/tsoro/expl_gb.htm

Drawing from the discussion above, there is no doubt that exploring board gameplay is relevant for understanding learning in the digital age. Indeed, non-digital environments such as board games can allow for learning skills that have been strongly associated with digital technology (e.g., computational thinking). Moreover, board games tell us that learning in the digital age is also about interactions, and community. Players value the social component of board games that allows in-person interaction, and reduces isolation (Graham, 2016; Jolin, 2016). Considering that learning occurs in this space, I argue that learning is facilitated in environments that allow, or are designed for interactions to happen among learners, and for spaces that limit the isolation of individuals in the learning process. While Peerutin (2017) views the rise of board games as a counterpoint to the digital trend, a "desire

to switch off from the harsh and anxiety-producing reality of the real world", I argue that the resurgence can shape learning in this age. Quoting a player, Matson (2018) writes:

While the internet is a great thing, sitting down and playing with friends and family is becoming increasingly important. Having time away from our phones and computers where we can talk, play and enjoy time together is something board games let us do.

A first glance at this statement seems to indicate that board game players want to stay away from digital technologies. However, a closer look at this statement also unravels a desire to interact, to be in an environment that enhances togetherness. This understanding is for instance supported by the livestreaming of board gameplay on Twitch.Tv, which shows that staying away from digital tools, is not the only and predominant attraction of board games for players. The social component of board games can inform the design of learning settings in the 21st century.

CONCLUSION

With the resurgence of board games, especially in the Western world, in the era of social media, digital games, and other forms of digitally-mediated human interactions, I discuss in this chapter learning in the digital age through board games. I contend that limiting the rise of board games to the need for players to interact in person, away from digital tools, may prevent researchers, designers, and educators from engaging with what that may mean for learning in the era of digital technology. The revival of board games gives us insights into learning and learners today; it tells us about learning in the digital age. As much as digital games' popularity has drawn the interest of educational researchers, the rise of board games in the digital era calls for greater exploration of learning in these spaces, and their potential to inform learning, and the design of learning settings in this age.

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1 German-style board games are characterized by strategy, economics, cooperation, military themes, and the downplaying of luck (Lamb, 2011; Kapp, 2018).

2 A strategic game created by Games Workshop Ltd; its success has led to the development of various derivative products.

3 A game published by Z-Man Games in 2007. Pandemic is one of the key titles in the board-gaming resurrection, and the collaborative aspect of the game the world attracts a wide range of players (Jolin, 2016).

4 *Songo* is made of two rows of seven holes each on a long wooden board. It is played with 70 identical seeds/pebbles distributed equally between two players, and the player with 40 seeds/pebbles wins the game (Meka, 2008; Owona, 2004). There are different versions of *Songo* game across Africa, as well as different rules. The winning principle mentioned here is specific to *Songo* played by the Ewondo ethnic group in Cameroon.

5 Mostly played in Southern Africa, made of four rows of 32 holes, and played with 64 seeds/pebbles

CHAPTER 2

Effective Instruction in Blended Learning Environments

CORRINE MCCABE, CENTRAL MICHIGAN UNIVERSITY AND RAYMOND W. FRANCIS, CENTRAL MICHIGAN UNIVERSITY

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Abstract. *Blended learning has become a popular term in education today. This chapter aims to explain the definition of blended learning, provide an overview of common blended learning models and offer suggested practices in designing a blended learning environment in K-12 settings. The authors also correlate blended learning practices and benefits to the Universal Design for Learning principles.*

Learning Outcomes

- Define blended learning
- Investigate common blended learning models
- Explore suggested strategies for designing a blended learning environment
- Develop an understanding of the connection between blended learning and Universal Design for Learning (UDL)

WHAT IS BLENDED LEARNING?

According to Horn and Staker (2015), "Blended learning is any 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" (p. 34). Blended learning environments are also commonly referred to as "hybrid" courses or classes. Any mixture of online learning and face-to-face (or traditional) settings can be classified as "blended learning." For the purposes of this paper, the terms "blended" and "hybrid" will be used synonymously.

Learning in the digital age means learning can happen at anytime from anywhere. Therefore, blended environments are becoming more and more prevalent in the world of education. Such learning environments are typically thought of as evolving in higher education. In fact, The University of Potomac communicated that 6,700,000 students were enrolled in online courses in 2014 (2017). Additionally, Lehman and Conceição (2014) reported, "Participation in online courses has grown by 358% since 2003 (p. 4). The demand for online learning opportunities is growing and will only continue to grow as time goes on.

However, these blended learning environments are making their way down into the land of high school and elementary education. Lips (2010) reported, "As many as 1 million children (roughly 2 percent of the K-12 student population) are participating in some form of online learning" (para. 3). The learning settings include fully online as well as blended learning programs. The potential benefits of blended learning, in particular, are causing K-12 schools to take notice and explore implementation of blended learning models.

WHY BLENDED LEARNING?

It is no secret that the education system of the United States is

failing students. This is likely due to the fact that society is changing and the world is evolving, but the education system is the same as it was over two centuries ago. Back in the 19th century, the goal of the school system was to prepare students for jobs in factories, mills and other labor-driven employment. Hence, the development of a "factory system" of education. Students were placed in groups according to their age (without regard for learning needs or abilities). All students were taught the same thing, at the same time, in the same way as if they were on a conveyor belt. This type of education worked then because the goal was different than it is now. Now, 200 years later, the goal of the education system has changed, but the model has not. As Horn and Staker (2015) explained, "Today's factory model of education, in which we batch students in classes and teach the same thing on the same day, is an ineffective way for most children to learn" (p. 8). School systems need to evolve into the digital age with the rest of the world, otherwise a great disservice is being done to our students. According to Lips (2010), "Online learning has the potential to revolutionize American education" (para. 22).

While the research is limited for elementary settings, the flexibility and adaptability of blended learning, or hybrid, models offers enhanced teaching and learning experiences. Prescott, Bundschuh, Kazakoff and Macaruso (2016) explained, "Blended learning can take various forms, thus allowing users to adapt a program that best fits their pedagogical goals and physical setting" (p. 1). In other words, blended learning provides teachers with the ability to personalize learning for students. In a meta-analyses of 45 studies, Means, Bakia and Murphy (2014) found that, "on average, students in conditions that included significant amounts of learning online performed better than students receiving face-to-face instruction," and went on to state that, "the subset of the studies employing blended learning approaches was entirely responsible for the observed online advantage" (p. 20). Hence,

blended learning is suggested to be more beneficial than fully online or fully traditional settings.

Means et al. (2014) suggested several reasons or purposes for the implementation of blended learning in relation to K-12 schools which include the following:

- Accessibility of learning
- Facilitation of small group instruction
- Addressing diverse needs
- Increase in productivity
- Providing a variety of instructional methods and techniques
- Enhancing engagement among students and teachers
- Providing additional support for complicated, abstract content

As explained by Horn and Staker (2015), "Blended learning is the engine that can power personalized and competency-based learning" (p. 10). Furthermore, "It provides a simple way for students to take different paths toward a common destination," and, "It can free up teachers to become learning designers, mentors, facilitators, tutors, evaluators, and counselors to reach each student in ways never before possible" (Horn & Staker, 2015, p. 10-11).

BLENDED LEARNING MODELS

There are many ways in which blended learning has been implemented. As more is learned about the effectiveness of hybrid learning environments, one can postulate that more models will be developed. For now, the following models will be discussed:

rotation models, a flipped model, flex and “a la carte” models, an enriched virtual model, and a mixture or blend of models.

ROTATION MODEL

The rotation model is the most common model of blended learning used by elementary school teachers. In today’s classrooms, many teachers already use a rotation model in an effort to provide small group instruction. Common in elementary schools is the use of the Daily 5, which is a framework for structuring literacy time in the classroom. It consists of various activities designed to teach students independence while engaging in meaningful literacy tasks (Boushey & Moser, 2014). Rotation models are not new to the K-5 setting but are less utilized (out of blended learning context) in middle- and high-school.

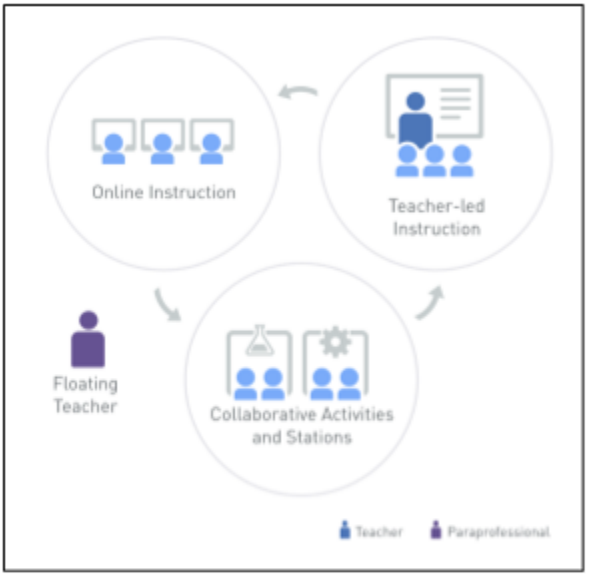

Figure 1. "Station Rotation." *Blended Learning Universe*, Clayton Christensen Institute, 2018, www.blendedlearning.org/models/.

Station Rotation. Specific to blended learning, station rotation includes groups of students rotating through learning stations, at least one of which would include an online learning component (see Figure 1). Depending upon the content area and the teacher, this may look different in every classroom or school. Typically, students are grouped by need or ability. The group moves through various stations together (the number of stations depends on the way the teacher set up the class). Suggested stations may include small group instruction with the teacher (the face-to-face component), individual learning (self-paced and online) and independent practice or application (may be an online task or traditional task).

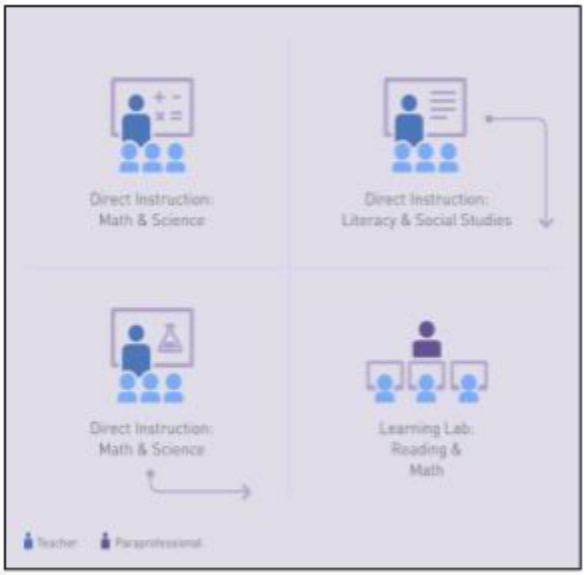

Figure 2. "Lab Rotation." *Blended Learning Universe*, Clayton Christensen Institute, 2018, www.blendedlearning.org/models/.

Lab Rotation. For schools which are not yet 1:1, meaning not every student has his or her own device to use, a lab rotation might be the only option (see Figure 2). The lab rotation is set up similar to station rotation, but involves students moving to a computer lab, facilitated by staff other than certified teachers (i.e. aides, paraprofessionals, support personnel) somewhere else in the school. A percentage of students' day is spent in the computer lab focused on basic skills through the use of software or other online materials deemed appropriate by the school district or teacher.

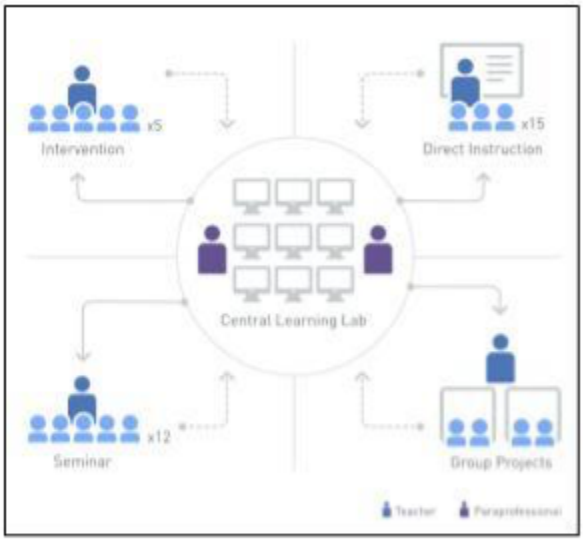

Figure 3. "Individual Rotation." *Blended Learning Universe*, Clayton Christensen Institute, 2018, www.blendedlearning.org/models/.

Individual Rotation. In this model, algorithms are used to design students' rotation schedule based on their assessment scores. They may still encounter the similar educational experiences, but the prescribed rotation schedule is based on their personal needs (see Figure 3). Horn and Staker (2015) explained the individual rotation as, "Each student has an individualized playlist to guide him through the rotations. Paraprofessionals are on hand to assist students with Edgenuity [online curriculum]. In the breakout rooms, a face-to-face teacher expands on the material introduced online and helps students apply it" (p. 45). The factor that sets this model apart from the other rotation models is that students transition individually rather than with a group of students.

FLIPPED CLASSROOM

Figure 4. "Flipped Classroom." *Blended Learning Universe*, Clayton Christensen Institute, 2018, www.blendedlearning.org/models/.

The flipped classroom model flips the setting of traditional learning (see Figure 4). In this model, students do the "learning" at home via online tools, such as instructional videos, recorded lectures, and other content-related material. The teacher then uses the traditional face-to-face time to help student apply what they have learned through higher-level tasks, projects and assignments. This model lends itself to the middle school and high school settings where time is extremely valuable, and often limited.

FLEX MODEL

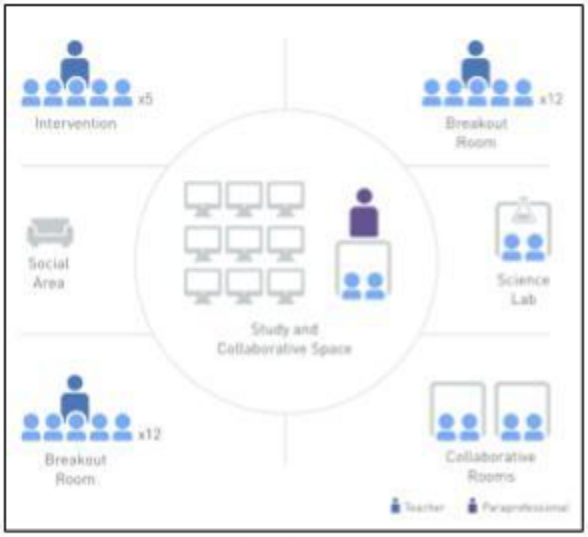

Figure 5. "Flex." *Blended Learning Universe*, Clayton Christensen Institute, 2018, www.blendedlearning.org/models/.

Originally designed to provide an opportunity for high school dropouts to recover education credits, the flex model offers students an opportunity to set their own schedules. In the flex model of blended learning, online instruction and online delivery of content is the main mode of student learning (see Figure 5). Teachers, in this model of blended learning, design the course, but then act as more of a facilitator and are used "as-needed." Learning is student-driven and self-paced in this model which is much more likely to be used in a high school or higher education setting.

A LA CARTE MODEL

Figure 6. "A La Carte." *Blended Learning Universe*, Clayton Christensen Institute, 2018, www.blendedlearning.org/models/.

The "A La Carte" model offers students a chance to take a fully online course on top of their traditional course schedule (see Figure 6). This type of model is seen more often in high school and higher education settings because if provides students with an opportunity to move more quickly through their program. As more colleges and universities are offering this option, the high schools are doing the same to make sure their students are fully prepared for higher education.

Figure 7. "Enriched Virtual." *Blended Learning Universe*, Clayton Christensen Institute, 2018, www.blendedlearning.org/models/.

ENRICHED VIRTUAL MODEL

As explained by Horn and Staker, "Many Enriched Virtual programs began as full-time online schools and then, noticing that their students needed more support, developed blended programs to provide face-to-face enrichment and a safe, peaceful physical setting" (p. 50). However, the traditional classes do not meet daily, or even regularly. Often times, courses implementing an Enriched Virtual model use the progress of the students to determine how often they provide traditional face-to-face instruction or support. That being said, this model lends itself to the higher education setting and is not ideal for K-12 schools (see Figure 7).

MIXTURE OF MODELS

While the models of blended learning described above are the most common, it is not uncommon to see a blend of models evolving in classrooms. For example, an elementary school teacher might use a "station rotation" model, but "flip" his or her whole group instruction to make efficient use of his or her time with students. The bottom line is that as students continue to evolve and the goal of education continues to evolve, so will best practices in education.

DESIGNING A BLENDED EXPERIENCE

Designing an effective blended learning experience is not as easy as just taking traditional content and making it available online. Means et al., (2014) cautioned that the benefits of online learning, "tended to result from a redesign of instruction to extend learning time or promote greater engagement with content" (p. 23). In addition, they explained that such positive outcomes were a result of blended learning environments which, "were likely to involve additional instructional resources and activities that encouraged interactions among learners" (Means et al., 2014, p. 23). Furthermore, Lehman and Conceição (2014) suggest the use of "intentional design" which they explained as, "a method that involves purposeful action and takes into consideration the online learning environment, the teaching process, and learner characteristics" (p. 19).

COMMUNITY & CULTURE

One of the most important factors to consider in designing a blended learning experience for students is establishing a

community and culture of learning and growing. Establishing a sense of community in a traditional classroom is much easier to do than in an online environment. BlendedLearning.org shed light on this important factor by stating, "Culture is especially useful—or toxic—in blended programs because blended learning goes hand in hand with giving students more control and flexibility. If students lack the processes and cultural norms to handle that agency, the shift toward a personalized environment can backfire" (Clayton Christensen Institute, 2018). Teachers must be very intentional with their course design to include components of interaction and collaboration amongst online students. In the field of blended learning, a teacher should ensure that the culture he or she sets up within the traditional setting is upheld in the online setting as well.

Delgado, Wardlow, McKnight and O'Malley (2015) dittoed the need for establishing a culture of learning. They suggested, "Fostering a learning culture means shifting a traditional teacher-centered model to a student-centered model," which allows the students to drive their own learning while the teacher is available to provide personalized direct instruction to a small group of students or one-on-one (p. 403). Poirier (2010) provided the following suggestions for instructional strategies which can help establish a culture of collaboration and learning:

- Encourage student leadership in online discussions through assignment of roles
- Integrate ice breakers and scavenger hunts when introducing a new topic
- Use team-based jigsaw presentations to review content
- Ask students to submit photos with their introductions
- Require students to create and maintain a digital portfolio and provide links for the rest of the students to view

MOTIVATION & ENGAGEMENT

Francis (2012) pointed out that, "Simple class size and access to technology can lead to students having a greater opportunity to be off-task and disengaged in the classroom" (p. 147). This can happen in blended learning environments as well, even with the teacher in the same room. When building a blended learning experience or hybrid course, engagement and motivation are crucial to the success of students regardless of their age.

Andrew Miller, an experienced online teacher of K-12 students, has experienced the challenges of motivating and engaging his students. Through his experiences, Miller (2012) found that, "If you want students to be engaged…it [the activities] must be meaningful" (para. 3). In order for learning activities to be meaningful, they must have purpose.

Whether in an online or a traditional classroom setting, purpose is a driving force behind engagement and motivation. Boushey and Moser (2014) explained, "Setting a purpose and creating a sense of urgency establishes a culture in which every moment of learning and practicing counts" (p. 37). When teachers clearly establish the reason behind an activity, online or in-person, and the students feel the sense of urgency and usefulness, teachers and students will work together to succeed. Kelly (2012) further explained the need for students to understand the relevance of the activities or the content embedded in online learning. Teachers can ensure students understanding by, "being explicit about how the skills and knowledge students acquire in the course can be applied beyond school" (para. 5).

In addition to understanding the usefulness of coursework, Kelly (2012) indicated that students need to feel empowered. "Students feel empowered when they feel that they have some control over some aspects of their learning" (para. 3). One way to provide students with this sense of empowerment is through providing choices. In fact, Boushey and Moser (2014) use this concept in the

Daily 5 framework. Based on the work of Gambrell (as cited by Boushey & Moser, 2014), "Choice has been identified as a powerful force that allows students to take ownership and responsibility for their learning. Studies indicate that motivation increases when students have opportunities to make choices about what they learn and when they believe they have some autonomy or control over their own learning" (p. 25). In sum, purpose and choice equate to motivation and engagement.

CONTENT & ORGANIZATION

One of the major benefits of digital learning is utilizing online formats to access and use up-to-date, current content. In addition, "[blended learning] enables bringing the affordances of technology to bear in teaching conceptually challenging abstract and complex content" (Means, Bakia & Murphy, 2014, p. 115). Supplemental resources, including instructional videos and other interactive media, are readily available online allowing instructors to vary the way they present new and difficult concepts to their students. Pearson Education (2016) pointed out, "Next generation instructional systems that include print and digital options with online adaptive skill building allow teachers and students to personalize in new and exciting ways" (Pearson Education, Inc., 2016).

Finding ways to present curricular content to students is only half the battle. Teachers also need to organize the content in a manageable way. Many online learning platforms have organizational tools available to instructors, such as timelines, modules and units. Many instructors choose to set up the online component of the class in a module format. Doing so breaks the content down into more manageable chunks. Using a modular format also allows students to plan their time and set goals. Lehman and Conceição (2014) explained that using modular (or

"chunking") techniques, "helped the students reduce cognitive overload and allowed them to focus on the content without becoming overwhelmed" (p. 24).

ASSESSMENT

With an online component embedded in traditional instruction, digital tools to create assessments which provide immediate feedback are more prevalent. Additionally, teachers are exploring the many ways in which students can demonstrate their learning beyond the multiple-choice assessments of the past. Access to digital devices with internet access enables students to "show what they know" in a multitude of ways which were impossible before, including: recording an audio or video response using tools like Recap or FlipGrid, making an interactive presentation using Nearpod, collaborate on a project using Google Docs or Google Slides, create a website or a blog, etc.

COMMUNICATION

Another key component in designing online learning environments is communication. Clear communication of expectations and learning intentions, success criteria and learning progressions are essential for student success in online learning. Waack (n.d.) summarized John Hattie's work regarding teacher clarity with the following statement, "Clear learning intentions describe the skills, knowledge, attitudes and values that the student needs to learn." The criteria for success should also be clear and concise. Students need to know what they need to do in order to be successful. Sharing the progression of learning allows students to understand how content builds throughout the course or class. Doing these things provides students with a sense of organization and time management allowing students to pace themselves, which will in

turn keep them motivated and engaged. Lehman and Conceição (2014) provided a few clear guidelines for this task:

- Provide specific course outcomes
- Include explicit directions for assignments and tasks
- Share the goals of the course or class
- Use deadlines or due dates (p. 25-26)

In addition to the above suggestions, it is also important to provide consistent and specific feedback to students throughout the blended experience. This might be done through chats, email, and/or commenting tools. Lehman and Conceição (2014) reported, "Consistent feedback made students feel self-confident and provided them with a consistent pace" (p. 29). Lack of feedback can often have negative effects on the learning environment, whether online or in-person. In a meta-analysis of educational studies, Hattie and Timperley (2007) found that, "Feedback is among the most critical influences on student learning" (p. 102).

PERSONALIZED LEARNING

"The opportunity to help every student learn at the best pace and path for them is the most important benefit of digital learning" (Pearson Education, Inc., 2016). In order to do this, instructors must start by getting to know their students and their students' interests. This can be achieved through interest-surveys, informal chat sessions, and icebreaker activities (all can be done online or face-to-face). In addition to understanding students' interests, it is also important to be proactive about students' needs. One of the benefits to online courses or classes is that it reaches mores students. However, with more students come more diverse needs. It is important that instructors take into account their students' learning needs and find ways to address the needs through the

presentation of the content, the learning activities and the ways in which students demonstrate their understanding.

UNIVERSAL DESIGN FOR LEARNING

According to Coy, Marino and Serianni (2014), the demand for virtual learning environments is growing (p.64). With that growth comes more students with more needs. It is the instructor's responsibility to consider the needs of all students as he or she designs an online learning environment. Many of the instructional strategies discussed above can be addressed through using Universal Design for Learning (UDL) principles. Developed by Meyer and Rose, "Universal design for learning (UDL) is a framework to improve and optimize teaching and learning for all people based on scientific insights into how humans learn" (Cast.org, 2014). Typically, when one hears the term UDL, he or she automatically thinks in terms of special education and assistive technology. However, UDL is actually focused on meeting the needs of all learners, using strong pedagogy (in online or traditional settings), and using high-quality, research-based instructional practices. "UDL guidelines offer a set of concrete suggestions that can be applied to any discipline or domain to ensure that all learners can access and participate in meaningful, challenging learning opportunities," and these guidelines are ever-evolving as scientists learn more about how people learn (Cast.org, 2014). The UDL principles include providing multiple means of engagement, representation and expression.

Providing "multiple means of engagement" refers to the "why" of learning. This includes using a variety of engagement techniques which may include providing options for "recruiting interest, sustaining effort and persistence, and self-regulation" (Cast.org, 2014). In an online environment, strategies might entail:

- Collaborating with students to set a vision or goal and

purpose

- Providing multiple paths to reach the same learning outcome
- Creating self-reflection and self-assessment tools
- Having students predict outcomes on assignments or tests

Regardless of the strategies used, the ultimate goal of providing multiple means of engagement is to create a sense of purpose and motivation for all students (Cast.org, 2014).

The next principle of the UDL framework is to "provide multiple means of representation" which refers to the "what" of learning. This is about the presentation of the curricular content. It is important to provide options for "perception, language and symbols, and comprehension" (Cast.org, 2014). When designing any online content, an instructor might think about:

- Minimizing distractions on an educational video by using SafeShare.tv
- Using closed-captioning on instructional videos
- Paying attention to the use of distracting fonts and colors in presentations
- Using infographics or other media in addition to text
- Providing outlines of important ideas in complicated content

These strategies are important in the online learning setting, but also in the traditional classroom as the goal of providing multiple means of representation is to create "resourceful and knowledgeable" students (Cast.org, 2014). The use of technology makes this easier for teachers.

Finally, the third principle of UDL is to provide "multiple means of expression" which addresses the "how" of learning. This principle

focuses on the responsibility of teachers to provide options for "physical action, expression and communication, and executive functions" (Cast.org, 2014). Strategies for addressing these concepts may include:

- Providing multiple ways to access content and material (interactive e-books)
- Allowing students to respond in various ways (audio, video, drawing, etc.)
- Using scaffolding techniques when reading and writing
- Using interactive web tools (annotation software, storyboards, etc.)

Cast.org stressed, "It is important to provide alternative modalities for expression, both to the level the playing field among learners and to allow the learner to appropriately (or easily) express knowledge, ideas and concepts in the learning environment" (2014).

UDL is an instructional framework which uses best pedagogical practices, regardless of environment; however, the use of technology makes using UDL techniques easier for teachers and students. It requires a shift in pedagogy in an effort to reach all learners despite their academic (or social) needs.

CONCLUSION

In conclusion, Lehman and Conceição (2014) explained that, "content design needs to be developed differently depending on the discipline and the desired outcomes of a specific course" (p. 20). Furthermore, "This process requires intention, anticipation, prioritization, and envisioning" (Lehman & Conceição, 2014, p. 20). Although the research is limited, "Blending online instruction with teacher-led activities can enable better learning when it provides a

unique, new capability that supports the processes of learning, and when it increases the amount of time during which students are actively engaged in learning" (Means et al., 2014, p. 120).

As society continues to move away from the traditional factory model of education and into learning in the digital age, blended learning offers "the best of both worlds." Benefits of blended learning models typically include: differentiated instruction, more effective use of instructional time, use of multimedia to enhance teaching and learning, personalized learning paths addressing specific learner needs, targeted instruction opportunities, increased motivation and engagement.

However, to reap these benefits, schools must consider several important pedagogical factors in their quest to set up an effective blended learning environment; such components include building a community and fostering a positive culture, using strategies to establish and maintain motivation and engagement among students (and teachers), practicing effective communication with teacher clarity and effective feedback, personalize learning for students and incorporate principles of UDL in an effort to reach all learners. Delgado et al. (2015) reported that, "blended learning could be better than traditional classrooms, when instructors' involvement, interaction, content, student capabilities, and the right amount of human to technology [are] combined" (p. 403).

QUESTIONS TO CONSIDER

- How do the authors define Blended Learning?
- How does the author's definition compare and contrast with your existing definition of Blended Learning?
- From your experiences, how has learning Blended Learning been a part of your learning experiences, and where could it have fit in a seamless manner?

- The rotation models of instruction provide a variety of opportunities for experience and learning through digital and blended means. How do you see any of the rotation models best fitting with your personal knowledge base and instructional style?
- Where might a mixed-model of methods best fit for student learning in digital settings? Provide a rationale for your response.
- Considering the key elements of digital learning through a Blended Learning format provided in the chapter, develop a learning opportunity to use the key elements of Blended Learning from the chapter. Provide a description of the elements you included and the ways they contributed to the learning opportunity.

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CHAPTER 3

Podcasting as a Mode of Motivation in Online and Blended Learning

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ABSTRACT: *With the emergence of technology from the late 20th century into the early 21st century, many colleges and universities are playing catchup with how modern students learn best. Administrations and instructors are expected to integrate the best use of technologies in their courses and remain vigilant to the ever-changing landscape of educational technology, "Effective use of technology is not an optional add-on or a skill that we simply can expect teachers to pick up once they get into the classroom. Teachers need to know how to use technology to realize each state's learning standards from day one" (Department of Education, n.d.). Instructors are increasingly expected to become experts in their specialty area as well as in new teaching pedagogies that utilize changing technology. On top of motivating, stimulating and evaluating students, the expectations of adding*

educational technology to lesson planning can be challenging. Mobile technologies, such as podcasts and vodcasts offer educators a platform to supplement their material. Students are more and more familiar with these modes of learning and are able to adapt them not only to their education but to their day to day lives.

MOTIVATION

In the simplest of terms motivation is the reason or reasons we do anything and everything throughout our lives. We are motivated to do things as simple as going to the grocery store so we have food to eat, to more complex activities like going back to school to advance one's career or taking courses to learn a new language. Motivation is defined as, "the act or process of giving someone a reason for doing something, a force or influence that causes someone to do something" *(Merriam-Webster, 2017)*. There are many factors that play a role in motivation and many theories exist that explain how and why humans are motivated. In terms of online learning, finding new technologies and incorporating them into courses is a great way to keep students motivated and attentive to course material.

There are many accepted theories of motivation including: Maslow's Hierarchy of Needs, Knowles' Andragogy and Alderfer's ERG Theory. These theories focus on why we do what we do, how we reach a certain goal and conceptualize the meaning behind what we do.

Perhaps the most widely known and accepted theory of motivation is Maslow's Hierarchy of Needs, which assumes that all humans have the same basic needs and move along the same spectrum when it comes to satisfying these needs. The five basic needs that Maslow identified are: physiological (the most basic), safety, love/belonging, esteem and self-actualization (the highest level of satisfaction) *(Maslow, 1943)*. Maslow believed that everything we do follows these needs and once a need is fulfilled

we move onto the next basic need, and then the next until we reach our full satisfaction with that need. Maslow also pointed out that needs are not individual, they often rely on each other and are dependent on the prior satisfaction of a different need *(Maslow, 1943)*. Human motivation does not only focus on reaching the self-actualization need but also focuses on not being brought back to the physiological need. For instance, I go to the store to buy groceries to feel satiated (self-actualization) but also to not starve (physiological), satisfying both ends of the spectrum *(Maslow, 1943)*. In relation to online and blended education, learning is a process that can be broken down into a hierarchy. In terms of a hierarchy of a course from the student perspective, they must be accepted into the school first (the most basic need) and they need to have support and self-actualization to succeed in the course (the highest level of satisfaction). When these needs are met, most students will be able to succeed, and integrating what many know best, technology, will help them reach these levels of satisfaction.

Another popular motivation theory is Knowles' Adult Learning Theory, highlighting the idea of andragogy. Knowles believed that adult learners should be studied differently than just pedagogically, separate from adolescent learners. He hypothesized that adult learners have five key characteristics: self-concept, experience, readiness to learn, orientation to learning and motivation to learn. These traits brought him to the conclusion that adult educators must enforce why the content of their teaching is important and show adult learners how the content they are learning will help them reach their goals. Knowles' theory encompasses these ideas by stating, "The adult learner brings into the continuing educational arena a rich array of experiences that will affect the learning styles and assimilation of knowledge. Adult learners need to be able to apply the knowledge into their life situations" *(June, 2010)*. Essentially, adult learners are more likely to question educators and educators need to be proactive in their facilitation of their courses and have reasonable justification for why they are

delivering their courses in the manner in which they choose to do so.

Being aware of these characteristics, Knowles also believed that adult educators must assume particular implications in their practice of teaching:

- Set a cooperative climate for learning in the classroom
- Assess the learner's specific needs and interests
- Develop learning objectives based on the learner's needs, interests, and skill levels
- Design sequential activities to achieve the objectives
- Work collaboratively with the learner to select methods, materials and resources for instruction
- Evaluate the quality of the learning experience and make adjustments, as needed, while assessing needs for further learning *(TEAL Center Staff, 2011)*

In other words, "Because adults learn by doing, effective instruction focuses on tasks that adults can perform, rather than on memorization of content" *(TEAL Center Staff, 2011)*. A ten-year-old and a thirty-year-old function much differently due to life experience. When it comes to adult learners, many are motivated to build upon knowledge they have already gained to further their careers. A grade school, adolescent learner is learning brand new information in many cases and is fresh to the concepts and ideas. Everyone has to go to grade school in one way, shape or form, while adult learners are often doing so by choice and personal motivations.

Knowles' theory is more focused on adult learners, opposed to Maslow that studied humans in general. In a way, Knowles expanded upon Maslow's basic ideas and applied andragogy specifically to Maslow's Hierarchy levels of esteem and self-actualization. The majority of adults who go back to school at a

higher education level do so in order to gain prestige in the workplace and feel a sense of accomplishment. It is no small feat for adult learners to maintain a career, go to school and reach one's full potential, outlined by Maslow and applied to Knowles Adult Learning Theory.

A third motivation theory that expanded on Maslow's Hierarchy of Needs is ERG Theory by Clayton Alderfer. Alderfer surveyed 110 bank employees on 21 hypotheses based on what effects their morale within the workplace. While not all the hypotheses were supported by the data collected Alderfer concluded that workers have three basic needs, existence (E), relatedness (R) and growth (G). Alderfer did not treat these human characteristics as static, rather he believed they were fluid and one did not need to be met before moving onto the next factor. He did not treat them in a hierarchy which differed from Maslow and did not treat the factors independently. Some similarities between the two theories are, Alderfer's existence needs encompass Maslow's physiological and safety needs, the relatedness factor is equal to Maslow's social and self-esteem and the growth component of ERG theory uses Maslow's self-esteem and self-actualization features *(Alderfer, 1969)*. A criticism of ERG theory is like that of Herzberg. Alderfer only studied employees of a bank in New York. Translating this to other fields is possible but a deficiency with the original study. Regarding online education, the factors of existence, relatedness and growth all relate to keeping students motivated. Maintaining these characteristics will keep students focused and on track. Working them together and relating the students and allowing them to grow together will create a powerful learning environment.

In terms of online versus face to face (F2F) education, from my perspective of taking classes in both forms, the motivation of the instructor and the instructor's ability to use technology can make or break a course. Even in F2F learning, if an instructor is uncomfortable with technology within the classroom, learners will react accordingly and if online instructors simply use discussion

boards in place of in-person discussion the course becomes a form of a check list where students feel like they need to post a certain number of times and move on. Adults learners specifically, do not just go back to school for fun, they do so because they are motivated to move to a point in their life that they cannot do so without the education.

In the article, "17 Tips to Motivate Adult Learners", written in 2013, Christopher Pappas makes a clear yet controversial argument for approaching adult learnings in online courses differently than others, "a lot of the learners are often forced to take on your eLearning course to enhance their skills, keep their job, get a job, or continue further with their career plans" *(Pappas, 2013)*. While this theory does not have the most uplifting message, the truth of the matter is, online adult learners are in school for many different reasons than an 18-22 year-old straight out of high school looking to find a career path. To recognize this idea, he gives tips to combat the issue, many of which can be adapted to online learning and podcasting. A few key tips are: Facilitate Exploration, Build Community and Integrate Social Media, accommodate individual interests and career goals, stimulate your learners, ask for feedback and present the benefits of undertaking the course *(Pappas, 2013)*. All of these ideas can help to keep students motivated, and knowing how they participate in classes is an important factor in creating courses that will appeal to them, "it is important to understand participation, to identify the different participation patterns and learner types, and to offer them appropriate support" (Nistor & Neubauer, 2010). If students are aware that a project or class discussion can help them in their job the next day, students are more likely to pay attention and gain interest in the concepts being presented. Adult learners have experience in the real world, so asking for their feedback does not only help the instructor but it makes them feel like a part of the course and like their opinions and experiences matter.

The use of technology is a good way to reach a group of students

who are in a course and can adapt well to the use of different course deliveries as a learning material. Effective motivation in education has many facets, including useful promotion of learning and effective instructional techniques. Staying informed with how students learn can be a challenge but universities that accept this challenge will succeed in the long run and their students will benefit greatly, "t*he intense focus on student success has generated unprecedented pressure for improved retention and completion at institutions across the country and around the globe. At the foundation of an effective student success strategy is harnessing the right technology resources to drive results and positive outcomes" (UB Custom Publishing, 2015).* Higher education needs avoid resisting or pushing back on new technology since some students may know more about technology than some instructors, however, they do not know how to translate their knowledge into using it as a successful motivator in a course. By educating the educators to maximize outcomes and student's success, universities as a system will succeed and be as useful as possible for the student.

ONLINE AND BLENDED LEARNING

Online and blended learning are described in many ways with different names that often refer to the same thing. One university describes online as, "Online learning provides meaningful learning opportunities using a wide variety of teaching modalities. In today's society, learning takes place anytime, anywhere" *(University at Buffalo, 2017)*. The authors of the book, Learning Online What Research Tells us About Whether, When and How, define blended learning as, "the use of online learning in conjunction with traditional teacher-led forms of instruction" *(Means, Bakia, & Murphy, 2014)*. The anytime anywhere concept ties squarely to the overarching reasoning for online and blended learning. Technology is everywhere, it is hard to find someone without a smart phone,

laptop, tablet or computer that does not have access to the internet and education is smart to tag on to this trend and incorporate meaningful ways for educators to reach a bigger audience than in traditional face-to-face classrooms.

There is some ambiguity surrounding the term online learning. There are many terms related to online learning that may mean the same thing but are used in different contexts. Some of these terms are:

- Online learning/online education/online programs
- Distance learning/distance education
- Hybrid learning/hybrid courses
- Blended
- E-Courses
- E-learning
- Web courses
- Distributed course delivery
- Independent learning *(University at Buffalo, 2017)*

All of these terms are used interchangeably to describe learning that takes place outside of the traditional classroom. As this university also describes, within online learning there are multiple types of technology mediations and terms that incorporate not just technology-based modes of learning but include face-to-face time as well:

Technology Mediation	Terminology	Definition
More	Fully online course	Course that does not require the student to come to the main campus or meet face-to-face May use synchronous or asynchronous technology
	Hybrid/ blended course	Course with strong online component and significantly reduced face-to-face classroom meetings
Less	Web-supported course	Traditional course that is supported by online materials, but whose face-to-face schedule is not altered

(University at Buffalo, 2017)

In all these mediations they describe, technology plays a key role in the structure of the delivery of the course. These ideas are constantly evolving and will continue to do so as technology changes.

The authors of the book, *Learning Online What Research Tells us About Whether, When and How*, by Barbara Means, Marianne Bakia and Robert Murphy, also state four key factors that have led to the emergence of online learning and it's continual growth that does not show any signs of slowing down:

1. As technology capabilities have expanded and information technology has become more affordable and mobile, people live more of their lives online.
2. The belief that it can address some of education's persistent and emerging challenges including achievement gap and the rate at which students – especially poor and non-Asian minority students – leave high schools and colleges without a diploma
3. Economics – costs of online learning compared to face-to-face instruction consistently find savings associated with the online option, although variance in costs for both exists

4. Belief in its power to provide better learning experiences

(Means, Bakia, & Murphy, 2014)

All of these factors have led to a large growth in online learning at all levels of education, from K-12 to higher education. Once universities recognize these reasons, they also need to realize the purpose of blended and online learning to implement the technology correctly and keep students motivated.

A leading issue with online learning is dropout rates, which can be directly tied to motivation. If students are not highly motivated in online courses they are more likely to not stick it out and drop out before completing their classes. Given that online learners tend to be adult learners, special attention needs to be paid to this group of students to prevent them from losing motivation and dropping out of school, "online students were significantly more likely to dropout than campus-based students. Age was found to have a significant unique effect on dropout in both programs with older students more likely to dropout" *(Patterson & McFadden, 2009)*. A key theory related to this concept is Knowles Adult Learning Theory of Andragogy. His theory assumes that adult learners have five key characteristics, including: self-concept, experience, readiness to learn, orientation to learning and motivation to learn *(June, 2010)*. Knowing these characteristics can help instructors create courses with adult learners in mind and keeping students motivated while learning to their best ability should be the cornerstone of any successful course.

Online learning is very popular in the early 21st century, however, it does not come without its controversies. Online universities are popping up nationally and across the globe. U.S News and World Report, one of the most noted publishers of university and college rankings began ranking online degree programs in 2012 as a separate list. Businesses and universities are doing everything they can to stay relevant and beat out the competition. This has caused some skeptics to note a large amount of debt students leave for-

profit programs with and the intense recruiting practices some schools implement *(Means, Bakia, & Murphy, 2014)*. Unfortunately, few things in life remain successful without someone trying to take advantage of its popularity and potentially vulnerable users. Major universities with the proper accreditations and history can create online and blended degree programs and maintain their success by keeping to their core values and doing everything they can for their students and instructors.

PODCASTS

Podcasting is an emerging technology used to motivate students. A podcast is defined as, "a program, as of music or talk, made available in a digital format for automatic download over the internet" *(Merriam-Webster, 2017)*. The ease of use of podcasts is what makes them so revolutionary:

> "when a user subscribes to a podcast, audio content is downloaded over the internet to a user's computer; when his or her portable media player is attached to that computer, the new audio content is automatically placed on the portable device. As new editions of the podcast become available, the content (usually in the form of an audio MP3 file) is automatically downloaded to the user's computer and, subsequently, his or her portable device: the subscriber being required to do no more than obtain the initial subscription. It is this simplicity that leads to the true power of the concept behind podcasting, which can be thought of as a series of time- shifted radio shows to be heard whenever and wherever it is most convenient for the user" (Savel, Goldstein, Perencevich, & Angood, 2007).

Unlike many other forms of subscription based platforms, the only action the user has to take with Podcasts is to subscribe and the content is automatically downloaded. This allows the user to subscribe initially and not have to worry about whether or not they

are getting the most up to date information or the latest rendition of a podcast.

Another adaptation of podcasts is the changing landscape of higher education student populations, "contemporary higher education reflects increasing diversity from this traditional student profile. As a major grouping, adult students now comprise more than 45% of the current post-secondary population in America" (Knapp, Kelly-Reid, & Ginder, 2010)

It is also important to note that an Apple product is not required to listen to podcasts, they can be played on any portable device or computer that plays MP3 files (Savel et al., 2007). With the wide array of cell phones in the market, the applicability of podcasts to multiple products makes them desirable in education. Every student now has some access to a phone or computer that can play audio, making podcasts omnipresent.

Knowing how students are adapting to the technology and if it remains a relevant form of instruction is vital to a successful pedagogy:

> "Similar to many other educational technologies in the past, the ultimate use of podcasting and its influence on the traditional lecture may not be determined by the potential of the technology, but rather by the way in which it is perceived within the institution, by both teachers and students. Its use will be strongly influenced by the dominant pedagogies employed in these contexts" (McGarr, 2009).

When podcasts were first introduced to education, many students did not know how to use them. They were unsure how to utilize what they were listening to since so many students are used to taking notes or reading textbooks. Students slowly adapted to using the podcasts, not as more information on top of lectures or readings but learning that the podcasts allowed them to, "manage the rest of the course materials in a more efficient manner. Consequently, the course podcasts allowed for a decrease in the feeling of information overload and an increase in the importance

of the rest of the course materials" (Fernandez, Simo, & Sallan, 2009). Relating to online learning specifically, students often undertake online or mobile learning due to family, job and time restraints. Podcasts have been shown to be abundantly accessible, "many students commented that they did not have a permanent place to study, so they appreciated all kinds of materials that could be used in different places, for example while using public transport" (Fernandez et al., 2009). Online learners are constantly on the move and their only focus in life is not their education. They have many things going on and being able to study while waiting in a doctor's office or on a subway without having to pull out paper articles or a clunky textbook, leads to great student satisfaction with podcasts and their accessibility.

Having the ability to incorporate a form of technology that students use for entertainment in their non-education lives, in a course, is a great way to engage the learner and use something that they are familiar with. A student is probably not going to use a PowerPoint in their everyday life but they may listen to podcasts on their commute to work or while they exercise. Podcasts can be a crucial component of an online courses design and can help bring different instructional pieces together. As a 2010 study, conducted on teaching presence and adult learners in an online course, notes, course design, facilitation and instruction are essential qualities that create positive teaching presence in a course (Ke, 2010). The overall design of the content, discussions, evaluations and interface enhanced students' interactivity, stated clear expectations, and gave the course purpose. All of these factors help motivate students to succeed and feel connected to the course, "in order to create a community of inquiry for adult students, we should first generate an effective teaching presence with supportive features to reinforce the emerging of cognitive and social presence in an online learning environment" (Ke, 2010). Students can learn the material from different sources, therefore they and the instructor can offer a range of different perspectives.

A majority of the literature points to podcasts as supplemental learning materials. As Fernandez, Simo and Sallan suggest, "podcasting is a powerful tool as a complement to the traditional resources on a course, but not a substitute for them" (Fernandez et al., 2009). Instructors should not simply create a podcast instead of a normal lecture or give students an article to read. The podcast needs to be used to enhance the information relayed in the typical instructional formats and help students expand the knowledge they are learning from simply listening in class or reviewing textbooks. McGarr writes, "if used exclusively as a substitute for traditional lectures such use may further reinforce students as passive recipients of information" (McGarr, 2009). To motivate students, instructors do not want them to be passive learners in their education, or simply using a podcast because it is the only means by which the material has been given to them. Instead, educators should want their students to engage in deep thinking and higher levels of cognitive learning to trigger their learning into eventual skill mastery. McGarr describes the use of podcasts as supplemental materials as,

> "providing revision and summary material, supplementary material can also be in the form of additional material which may broaden or deepen the student's understanding. This type of use can facilitate higher cognitive learning outcomes since the provision of supplementary material can provide students with alternative perspectives on content previously delivered or enable further and deeper exploration of topics" (McGarr, 2009).

Instructors can answer questions asked by previous students and incorporate these concepts into the podcasts to make students think outside the box.

By combining these materials, students learning has been shown to improve. A notable immersive study by Popova, Kirschner and Joiner looked at the use of podcasts as primers for lectures, in other words, the podcasts were given to students before they attended the lecture to help them scaffold their learning to which they could

"hang" new information. This is another form of using podcasts as supplemental information rather than simply using it as the sole means of conveying the content. The podcasts were approximately five minutes in length and consisted of an introduction, summary definitions of core concepts and examples, and ended with epistemic questions that were either, exploratory, predictive or argumentative. They delivered a Likert based questionnaire to the students during the last lecture to ascertain their perceptions of the process and use of podcasts. They wanted to study how novel the podcasts were to the ways in which students made used of the podcast materials and why they made use of them. Over half, (55%) of the respondents reported that they listened to podcasts for personal use outside of class related to the topics of, entertainment, news and education. For the podcasts associated with the course, students noted that they listened to the podcasts more than once, and the majority did not partake in other activities while listening. The students also noted that they felt more involved with their education due to the questions posed at the end of the podcasts and that these questions forced them to think more about the content and question their own knowledge in a cognitive learning manner (Popova, Kirschner, & Joiner, 2014).
Students were motivated because the podcast was given by their instructor, helped them become familiar and feel connected with the instructor and the material. This study gives:

> "insight on students' motivation to use such additional resources to gain more from lectures. The evaluation provided by the students essentially confirmed the hypothesis that audio-only primer podcasts were experienced as stimulating for students to (1) engage more deeply with the lecture and understand the content better and (2) reflect on the topics and on what they know about them" (Popova et al., 2014).

Students do not typically conduct self-reflection on a lecture or podcasts. However, by adding in the epistemic questions the instructor forced the student to think holistically about the topic

and bring questions to class that was sparked by the scaffolding podcasts.

Podcasts allow students to connect with instructors anytime and anywhere. The ease in which students in the 21st century can connect to a podcast is unmatched in most forms of technology, "Although podcasts are composed of MP3 files, it is the automatic distribution method combined with the potential for portability that makes podcasts what they are" (Bryans Bongey, Cizadlo, & Kalnbach, 2006). The majority of students, high school or adult learners, have access to a smart phone that can play podcasts and MP3 files. They can play them anywhere they want, as opposed to a video recorded lecture that has to be played on a computer and must have the visual attention of the learner to be effective. One author states this simplicity as, "What is novel with podcasting is the way that – a simple change in file format and delivery method – can meet students' mobile and lifestyle needs by transporting a professor's teachings away from the confinements of the lecture hall or computer/audio carrel and into any environment of the listener's choosing" (Bryans Bongey et al., 2006). If a student attends a traditional class in person or reviews a PowerPoint and reading materials online or an online or blended course they are still able to enhance their knowledge or supplement the materials with podcasts on their own time. Podcasts can also be used to review material before an exam or to catch up on a missed lecture (Bryans Bongey et al., 2006). The reach of podcasts is limitless and not constrained by a particular topic. They have the ability to break through the constraints of traditional classroom learning and time with its on-demand features and accessibility (Bryans Bongey et al., 2006). Finding new ways to relay information and adapting these techniques continually helps students stay motivated and connected to the course.

This concept of anytime, anywhere use of podcasts, relates to medical students as they must cultivate independent teaching skills and are in a profession where you never stop learning, medicine.

In the profession of medicine, doctors must complete board exams to recertify their credentials. The knowledge base for medicine is constantly evolving with new guidelines from different groups and boards based on the latest accepted treatments. The nature of residency is very similar to that of blended learning. In most cases, residents will have weekly lectures referred to as grand rounds where they present cases and discuss different treatment plans. They stay attuned to new research, practices, regulations and treatment options to supplement this learning with their own dedicated time to study the latest literature to keep themselves up to date and to contribute in grand round settings. A recent study conducted on emergency medicine residents and their use of podcasts suggested, "that residents spend a greater percentage of their time listening to podcasts than they do using other educational materials, including textbooks and journals" (Riddell et al., 2017). This group of students was motivated to use podcasts over traditional forms of educational resources for many reasons, including: portability, ease of use, ability to listen while doing something else, to "keep up with current literature" and to "learn EM core content" (Riddell et al., 2017). The students also noted that they were able to translate the knowledge learned from the podcasts into their own clinical practices (Riddell et al., 2017). While doctors are in the elevator or on lunch or driving to and from work, they are able to continue expanding their knowledge with podcasts. They can also choose podcasts based on topics they are interested in to keep their attention.

As the authors of a study on the use of podcasts by emergency medicine residents state, "As we adopt new technologies, we must also understand how and why they are being embraced by our learners in order to employ them more effectively" (Riddell et al., 2017). Another result of the study conducted by Riddell et al, was the fact that residents on average, preferred podcasts that were thirty minutes or less in length. They also, noted that the topics the residents preferred to listen to were based on themes that were

more controversial new topics and related to cutting-edge analysis as opposed to emergency medicine core content. While this may not be problematic, knowing how and why students are choosing the content that they are listening to can help those creating the podcasts incorporate what they feel is necessary into cover into ideas that may spark listeners interest.

While modernizing education must be on the radar of all institutions and instructors, maintaining effective learning must remain a goal in the efforts of adopting new technologies. Knowing the potentials of podcasting and vodcasting can help instructors implement it properly and assist the students along the way that will find it advantageous. Knowing the rationale behind podcasting is crucial for instructors to be comfortable with the technology and eliciting proper student response and use of it (Heilesen, 2010). A way to address this issue is to evaluate the use of podcasts in multiple courses over a long period of time. Studies have shown that having students engage in the podcast and actively engage in the content learned in the podcast can assist in retaining knowledge and creating a better academic atmosphere, "When it comes to actively engaging the students in the creation of course podcasts, it is a well-known fact that having to transform and communicate information increases retention rates dramatically" (Heilesen, 2010). By helping students accept the use of podcasts the instructor can improve the academic environment and get recognition from those most affected by new technologies, students.

As noted earlier on the general concepts of online and blended learning and potential consequences of implementing it, there has also been concern with the adaptation of podcasts that attendance in class or in online and blended learning requirements would be affected in a negative manner. "several studies conclude that all fears of students skipping classes when lecture podcasts are available so far seem unjustified" (Heilesen, 2010). While this is an issue to be aware of, it should not deter universities or professors

from using podcasts in their course materials. If it helps some students to supplement the other materials and allows them to expand their knowledge, they will be able to reach these students and teach them in a way they may not have been able to without the podcasts. Offering options in a course design for students will help them feel motivated to try new things and they may learn more about their own ways of learning that they did not know before and be able to relate their personal use of podcasting that they are already familiar with to their education.

VODCASTING

Podcasting has also evolved into video podcasting or vodcasting since its inception. A vodcast is simply formatting video into a podcast, a video podcast *(Merriam-Webster, 2017)*. Similar to regular podcasting, vodcasting allows students to review material for missed classes, control their own learning and improve their learning on content that may have been presented in a different manner. Kay describes, "Receptive viewing of podcasts assumes that learning material in whatever format is to be viewed by a student in a relatively passive manner. Students may search for desired segments or pause and review noteworthy concepts or facts, but the main pedagogical strategy is the delivery of information" (Kay, 2012). Students can rewind a vodcast or podcast and review material that they may question, and skip over the material they feel they have mastered.

Vodcasts can also assist in motivating students in many learning formats. Notably, students are motivated by video podcasting because the format helps them sustain attention, they are intellectually stimulating, they were relevant and the format allowed the students to connect with the instructor and build a relationship they might not have been able to in a large classroom or by simply reading a textbook or article (Fernandez et al., 2009).

Podcasting has been noted to have the same effect on creating a sense of community and proximity to the instructor. Hearing the actual instructors' voice rather than reading printed documents, the non-pre-established nature of podcasts material based on comments and suggestions from students and the ability of all students, no matter their skill set or learning methods allowed students to feel like they had a permanent connection to the instructor. Students were also able to manage their time better and study with more purpose which, as one study noted, "have a common consequence: an increase in student motivation, which constitutes one of the main principles of good practice in higher education" (Fernandez et al., 2009). Giving students the freedom to manage their own time and learn their best skills when it pertains to studying can give them independence. However, too much independence, and disconnection from the course can be a disadvantage, podcasting has allowed instructors to circumvent this issue with the students being able to hear their professors voice and personalized messages.

Knowing the ways in which the majority of students utilize vodcasts to their best ability is crucial for the teacher the use best practice. Students benefit from video podcasts because they can learn at their own pace, they find the technology useful, helpful, effective and stimulating and they have allowed students to study in a different manner that has helped them succeed in earning higher test scores and increased performance of skills (Kay, 2012). A specific way for instructors to be sure that they are reaching both to auditory and visual learner alike is by creating vodcasts that run parallel to podcasts, a traditional podcast that is audio only and a second that contains PowerPoint slides in an enhanced format. While podcasts are readily available and cover a plethora of topics, some students will still not be familiar with them, so easing them into the process and adding in visual aspect can be helpful to many learners (Fernandez et al., 2009). This idea helps

the instructor reach all learning types of students and helps the student feel connected and included in the class.

ITUNES U

Given the overall success of Podcasts and the ability of the technology to adapt to most topics, professors should be aware of the effects of them compared to in-person lectures. As stated previously, podcasts can be used as a supplemental mode to traditional PowerPoint slides or face-to-face lectures or they can be used to assist students who miss class or want to refresh their memories on a particular lecture. With this idea, came the emergence of iTunes U which began as a storage space for classrooms to keep their podcasts and has evolved in 2017 to include, "homework hand-in, an integrated grade book, and private discussions, it is a seamless way to organize your classroom. See how simple it is to deliver lessons, grade assignments, and stay connected — all from your iPad" *(Apple, 2017)*. McKinney describes the usefulness of iTunes U, "Apple points out that the benefits of iTUNES U include that it is easily accessible 24 hours per day, students can listen to the podcasts whenever and wherever they choose, and it helps to keep the students motivated because it engages them in a way that is very familiar to them (iTunes U is a link on the iTunes website)" (McKinney, Dyck, & Luber, 2009). While this technology is Apple based, it can be accessed on non-Apple products. iTunes U is a new and innovative way to not only used podcasts in a traditional online learning platform, such as WebCT or BlackBoard, but in this manner, the instructor can have their entire course, including grading in one place.

A unique aspect of iTunes U is the free access anyone that wants to access it can use. Any course that wants to put content onto the platform can do so, and any students or person with interest in the content can access it. Matt Breed states this as an advantage of the

software advantages of iTunes U along with being supplemental to other courses. He identifies that podcasts on iTunes U come from many universities, including recognizable names like Harvard, Yale and MIT. While a lot of people may not think they can get into schools like these or have the money to pay for them, iTunes U allows the user access to a great deal of the information their students are learning in the classroom. He also notes that if a student is not excelling or working well with a certain professor or course, they can look up a similar course on iTunes U and study the material that way. While it is not identical to what their own professor may be learning, the supplemental qualities of podcasts can be taken advantage of in many ways *(Breed, n.d.)*.

In a 2009 study comparing the use of podcast lectures versus in-class lectures by McKinney, Dyck, and Luber, 32 students participated in the in-class condition and 34 students completed the podcast condition. Since the podcast group was based on students having an mp3 player, students self-selected into which group they wanted to participate in. In both conditions, students were given the PowerPoint slides for note taking to utilize while listening or taking part in the in-person lecture. They were also instructed to log their study time and activities used in preparing for the exam that both groups would be given at the end of the process. Of the students in the podcast group, the majority appreciated viewing the slides while listening to the podcast. They found it easy to go back and review material based on the chapter markers that were integrated into each PowerPoint slide and found this helpful for studying purposes (McKinney et al., 2009).

Based on the exam administered at the end of the study, the students in the podcast group as a whole scored, on average, 8.77 points higher than the in-class lecture group. The authors also found that the 22 out of 34 students who were in the podcast group, who took notes while listening to the podcast, scored significantly higher than those who did not. Interestingly, the students who listened to the podcast without taking additional

notes scored similarly to those in the in-class lecture group (McKinney et al., 2009). The authors assess that universities, instructors and students cannot yet jump to any conclusions about using podcasts as replacements for current content delivery systems, whether they be in-person or technological. However, knowing how students utilize podcasts is key to knowing how an instructor can deliver a constructive message in their courses on their use. Knowing what else students are doing while listening to podcasts and how this is similar or different from what they are doing in in-class lectures can be beneficial to study and lead to greater understanding of the changing world of course delivery.

As with any new concept there are trends and unforeseen consequences that cannot be planned for but being able to deal with them swiftly and in a positive manner is key. Means, Bakia and Murphy state four major trends in online learning in higher education"

1. Self-paced, adaptive instruction and competency-based learning
2. Blended learning
3. Learning analytics
4. Massive Open Online Courses (MOOCs)

(Means, Bakia, & Murphy, 2014)

The last trend, Massive Open Online Courses is a noted unintended consequence related to online learning and podcasting specifically. MOOCs began when instructors in Canada wanted to offer their normal 25 student enrollment online theory course to anyone that wanted to take it and not pay tuition. Users had access to all readings, newsletters, discussions and all course material. Over 2,300 people signed up for access which began a new trend of offering courses to non-tuition paying students. The intent was to give access to information to people with simple curiosity or those that could not afford tuition. Other instructors and universities

caught on to this success and began to offer their courses in this manner as well.

A very successful case of offering a normal online university course as a MOOC was in 2011 when two professors, Sebastian Thrun and Peter Norvig, offered their Introduction to Artificial Intelligence course to anyone outside of the 200 Stanford University students who were already enrolled. An astounding 160,000 people from 190 countries signed up to take the course. The university had to enlist 2,000 volunteer translators to translate the course materials into 44 different languages. After three weeks of the course, the actual number of people participating online was 45,000, still more students than the entire Stanford Universities enrollment. The main piece of their course design was one to five-minute videos to explain key concepts, very similar to podcasting. Also, at the end of the course, students who were non-tuition paying enrollees that completed all course assignments received a "letter of accomplishment", to note their successful completion of the course *(Means, Bakia, & Murphy, 2014)*.

Another case of the MOOC concept that portrayed the "viral" nature of podcasting took place in a 2005 study on Podcasting. The authors of this study aimed to, "explore the benefits, challenges and impact of podcasting on higher education" (Bryans Bongey et al., 2006). They describe the unintended success of the implementation of the podcasts in a traditional biology course:

> "However, with a small amount of time and experience, we began to appreciate what has been referred to as the viral nature of podcasts, in which knowledge and use of the new podcasts spread rapidly and uncontrollably from one listener to the other. The distribution of the podcasts extended beyond the parameters of campus or students. Soon, Dr Cizadlo started receiving e-mail messages from out-of-state and non-US listeners. As one listener stated in an e-mail message, "I have directed friends (and yes, even my current Human Physiology Professor) to the podcasts" (personal communication, March 2, 2006)"

(Bryans Bongey, Cizadlo, & Kalnbach, 2006).

With the popularity where it was, the school and professor made some minor changes to their podcasts. They registered all of their podcasts to a directory, they were all made to be iTunes compliant, and all included an introductory statement and included a logo of the college's crest. One user commented on the addition of these elements to the podcasts that kept the students motivated and wanting to come back for more. The academic experience created by the podcasts and the attention to detail the university and professor paid to the student feedback motivated the students and felt them feel like they were part of their education. They were intrigued by a new way of learning and the university was smart to grab ahold of the situation and work hand and hand with the students and those outside of the university to deliver online learning in the best possible way.

CONCLUSION

The integration of podcasts into online learning has been shown to successfully reach a new kind of student cognition and blends well into online and blended learning. The accessibility and comprehensive nature of podcasts lends itself to learners who need another mode of learning other than traditional face-to-face interaction and allows students to learn anytime and anywhere they choose to. Podcasts are also easy for the professor to learn how to use and allow for adaptation along the way. Allowing students to be integrated into their education, and have their voices heard will help them remain motivated. The scaffolding and supplemental use of podcasts adds another layer to learning that can help professors and educators reach the greatest number of students and educating those around the world.

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CHAPTER 4

Virtual Proctoring and Academic Integrity

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Abstract. *From elementary school through higher education, students have taken examinations to evaluate their knowledge, abilities and accomplishments. With increased pressures to have superior performances for future occupational or academic consideration, students may consider cheating to achieve higher exam scores. The evolution of new technology enables students in all learning environments to have unlimited access to digital content. Therefore, some form of exam proctoring is needed in a digital environment to ensure a quality, educational experience is maintained. The issue of academic integrity regarding cheating is particularly important when considering how online students are completing their course exams. Holding students accountable for their actions of violating university policies on academic integrity is demonstrating a greater societal value of personal integrity. It also accentuates the expectation that students will perform ethically in a digital society.*

Institutions concerned with the academic integrity in their online

courses are considering the use of virtual proctoring software designed to protect against academic dishonesty behaviors in their students. Virtual proctoring takes place with a student being on their own computer, initiating a secured testing session via a dedicated web browser (or having accessed an instructor designated website) that is subsequently recording the student's behavior. Remotely the student is using technological means, a functional webcam and microphone, while they take their exam. To ensure the integrity of the exam-taking process in online learning, exams monitored through a virtual proctor are being found to be as secure as those completed in the presence of the instructor or another human proctor.

INTRODUCTION.

Since the latter part of the 20th century, advances in technology have dramatically changed the way education is delivered in colleges and universities. Online learning (also referred to in literature as eLearning or web-based distance education) has become an accepted means of delivering quality, accessible education to students in many different disciplines (Li & Irby, 2008). In the 2015 Survey of Online Learning (Allen & Seaman, 2016), for the thirteenth consecutive year, the number of higher education students taking at least one online learning course was up 3.9% over the previous year. With the increase in online learning opportunities, educators question how to maintain academic rigor while holding both on-campus and online students to the same standards, expectations, and academic integrity principles, particularly when considering methods of completing online course exams. Online learning fosters the perception, perhaps unfairly, that because students are separated by distance, it is difficult to monitor assessments and cheating – or academic dishonesty – may therefore occur (Poutre, Hedlund, & Nau, 2015; Watson & Sottille, 2010).

Despite efforts to prevent it, cheating remains widespread in academic institutions (Fass-Holmes, 2017; Kyzer, 2010; Lajoie & Bolichowski, 2010; McCabe, 2005; Rose, 2009). Placing an increased emphasis on grades, students in all learning environments may opt to cheat to achieve higher exam scores (McCabe, Trevino, & Butterfield, 2001). Higher education institutions must help students understand that embracing academic integrity is a necessary part of achieving success. As a means of contributing to a greater ethical society, universities should be taking steps to reduce instances of academic dishonesty by instilling a prominent level of ethical behavior and promoting digital citizenship in their students. As a part of the course design, instructors could incorporate how students would demonstrate digital citizenship in the exam completion process. Robb and Shellenbarger (2013) identified a way to promote digital citizenship and academic integrity in the classroom by addressing prevention, awareness, and role modeling. Prevention begins "with a clearly defined academic integrity policy that guides students in appropriate digital etiquette and helps them become responsible digital citizens. These statements, consistent with institutional academic integrity policies, should be included in the syllabus" (para 4). Offering activities within a course that demonstrate digital etiquette not only increases student awareness but serves as a good example of the instructor upholding academic integrity standards. "Perhaps most important in being a good role model are faculty addressing academic dishonesty when it occurs. Academic dishonesty has consequences and student offenders should experience them" (para 7). Mullins (2000) adds that "failure to address student academic dishonesty conveys the message that a core value of academic life, honesty, is not worth any significant effort to enforce" (p. 26). By allowing a student's violation to go unhandled, or not be addressed even informally, faculty are not best preparing students for the professional world that awaits them (Amua-Sekyi & Mensah, 2016). According to Kiviniemi (2015), the "consequences

should be serious, should cause students some psychological pain, and should require effort on the part of the student to overcome. Anything less is a disservice to our students as we prepare them to engage in their professional worlds" (p. 38).

The continual and rapid evolution of new technology enables students in all learning environments to have unlimited access to digital content, resources, and databases. While the focus of this chapter is regarding examinations, instructors who use other methods to show content mastery (e.g. presentations or portfolios) need to also consider technology resources (e.g. software plagiarism detectors) to ensure academic integrity is maintained. However, to ensure the integrity of the exam-taking process, there are creative solutions that instructors can implement. This chapter will first review how an online instructor could use Learning Management System (LMS) control procedures to achieve reasonable assurance that academic integrity has been maintained and that significant cheating has not occurred during online exams. Next, human and virtual proctoring options will be discussed followed by use of virtual proctoring software or websites in more detail, including this authors' pedagogical experiences using a virtual proctor. Virtual proctoring is defined as a student being on their own computer, having initiated a secured browser and webcam or instructor designated website, that is subsequently recording the student's behaviors remotely using technological means while they take their exam.

LMS CONTROL PROCEDURES.

With higher education institutions utilizing virtual proctoring tools in their online courses, the responsibility remains with the instructor to ensure that the correct tools for assessing student learning are in place. In addition to the proctoring of exam sessions, instructors who continue to offer traditional exams (e.g.

multiple-choice questions) in their online learning environments can utilize LMS features (e.g. group work, portfolio development, restricted amount of time to take the exam, no going backwards in answering questions, etc.) and not just rely on test banks solely for the development of exams. The institution's LMS controls the time, date, type, and length of the exam. Instructors can create exams from publisher purchased test banks or create their own multiple choice, fill in the blank, matching, or essay type exams; to name just a few of the options available. In setting up the online learning course exam, the instructor can adjust the length of time the student has to take the exam so the timing is congruent with the student's cognitive processing and reading abilities. An instructor can choose how exam questions are displayed to the student: all at once or one question at a time; to have the questions randomized for each student; or if the instructor wants to allow – or prohibit – the student from backtracking or prevent changing an answer already submitted. Instructors can allow students just one exam attempt or multiple exam attempts; where different exam questions can be generated for each attempt allowed. Instead of using the same exam each term (or semester), instructors can generate exams from pre-established randomized question pools that are stored within the course LMS making it easy to create new exams for each course (Fang, 2012). Use of LMS control procedures can provide instructors reasonable assurance that academic integrity has been maintained and that significant cheating has not occurred during online exams (Cluskey, Ehlen, & Raiborn, 2011).

HUMAN PROCTORING.

Traditionally, instructors within a classroom or lecture hall on campus have proctored exams within the same physical space that the student is taking their exam. Also, live or human proctoring takes place in a university approved location. Students travel to this

site to take their exam so both the human proctor and the student are in the same physical space. While offering a greater degree of confidence that the actual student is present taking the exam, the scheduling inconveniences, travel time, and other potential costs affiliated with human proctoring services are contrary to the reasons why students have chosen to take online learning courses. Additional drawbacks to the use of human proctors are a single person monitoring multiple students concurrently; poor training; lack of motivation; becoming tired, distracted, or overwhelmed; and being more subjective or biased towards the student they are proctoring (Marcus, Raul, & Ramirez-Velarde, 2008; Rios & Liu, 2017). Additionally, the subjectivity and variability of human proctoring also does not guarantee a cheating-free evaluation (Rose, 2009).

VIRTUAL PROCTORING.

Virtual proctoring looks quite different. The "eye" of the webcam focuses its attention on just that one student and acts in a more objective and unbiased way than a human proctor can (Marcus et al., 2008). Respondus Monitor, one virtual proctor option, requires that student's complete exams in front of a computer-mounted or manufacturer-installed webcam that provides the instructor with live streaming images of the student and their environment while taking the assessment ("Respondus", n.d.). The exam session is recorded and stored for the instructor to review after the student completes their exam. Concurrently, the use of software like Respondus LockDown Browser ("Respondus", n.d.) prevents students from searching for answers on the Web while taking exams through the online course. While there are additional virtual proctoring services beyond Respondus Monitor (B Virtual, Examity, Honorlock, Kryterion's Online Proctoring service, ProctorCam, ProctorU, and others), there is a lack of published research

comparing the existing virtual proctoring systems (Foster & Layman, 2013).

With virtual proctoring, students secure an Internet connection, download required software (or log on to an instructor designated proctoring website) and complete steps for their authentication prior to taking their exam. To ensure that the student who is completing the exam is, in fact, the enrolled student, instructors could rely on technological tools to authenticate the student's identity. Capturing an image of a government issued photo identification, or the university photo student ID, through their computer camera is one way to verify the identity of the student taking the exam. Students may also be asked to complete a 360-degree scan of their environment, including the specific area adjacent to their computer, where the student is taking their exam. This captures video and sound to provide a complete monitoring solution and to ensure other electronic devices, people, or supplemental external resources are not being used to assist the student in answering exam questions. Asking the student to check a box in the startup phase of their exam acknowledging they understand their institutions academic integrity policy and what is – or is not – allowed to be used when taking their exam can act as a deterrent against their engaging in academic dishonesty. Wilkinson's descriptive research (2008) found that students engaged in cheating behaviors due to lack of knowledge of their institution's academic integrity policy or lack of understanding what constituted a cheating violation for a particular course. If this information is presented to the online learner prior to them starting their virtual exam session, a student would be imprudent from using this as an excuse for their cheating actions.

Requiring students to complete a risk-free assessment, such as a two-question sample test, would allow students to exhibit their mastery of downloading the virtual proctoring software and completing the authentication steps required to successfully proceed through the test startup sequence. Completion of the no-

risk sample test also models the navigation routine that will be the staple of the course for the student's exam taking sessions in the online learning course. The sample test can also be an easy yet effective best practice for reducing online student anxiety (St. Clair, 2015). Instructors can then review the student's sample test and address any problems before the first course exam. Knowing that their instructor will be reviewing their recorded exam session can affirm for the student the importance of academic integrity in this digital society forum.

Many institutions offering online learning courses and who are concerned with the academic security of these digital learning environments are implementing virtual proctoring software designed to protect against academic dishonesty behaviors in their students (Baron & Crooks, 2005). Utilizing virtual proctoring tools while students take online exams can provide the instructor reasonable assurance that academic integrity has been maintained (Cluskey et al., 2011). Virtual proctoring seeks to dissuade the perception that cheating on exams is easier and more common among online learning students (Bartini, 2008). Research by Bedford, Gregg, and Clinton (2009), on both faculty and students, showed that virtual proctoring may be a valuable resource to higher education online learning programs because of its functionality, low cost, and help in deterring students from engaging in acts of academic dishonesty by cheating. Furthermore, the use of a virtual proctor is at least as trustworthy as a human proctor (Marcus et al., 2008) while upholding exam integrity, academic rigor and university standards of a quality education.

PEDAGOGICAL EXPERIENCES WITH CHEATING VIOLATIONS.

When I first began teaching undergraduate courses in the online learning environment, the university's psychology department

required the online learning student to take their course exams in the presence of a human proctor. In addition to the set of human eyes watching for overt acts of academic dishonesty, the human proctors could discretely capture screenshots if they saw or suspected the student to be looking up information on the Internet. It was during my third term of teaching that my first incident of a student looking up exam content on the Internet while taking her exam was detected by the human proctor. Over the course of the next two years, six more students were caught looking up exam content on the Internet while actively taking their exams and being proctored by a human. This institution had a clear, detailed academic integrity policy which outlined what constituted a violation (in this case cheating) as well as the options for how to process the suspected violation (options ranging from a stern dialog with the student to recommending the student be expelled from the university). While there was a scripted policy, there remained a lack of any standard for how to proceed. For each of the violations I processed, the students received a sanction of a failing grade for the course. Aside from the administrative time required to process these cases, the personal stress experienced in addressing these violations was taxing, regardless if it was the first or the seventh violation.

Because of these cheating violations, when I heard that my university was considering the use of virtual proctoring software, I volunteered my course as a pilot for implementing this exam monitoring technology. With training materials offered by the software company, as well as my university's office of information technology personnel, learning how to build virtual proctoring into my course, with the right balance of constraints, was not complicated. Prior to starting their webcam invigilated exam, the online students needed to install the Respondus LockDown Browser program to prevent them from accessing other websites while taking their online course exam(s). The Respondus software program allowed for me to review the recording of the students

taking their (submitted) exams within 24 hours of the exam-taking session. There were options to view each student's exam session in its entirety or to review randomly timed thumbnail images of the student. I could also watch before or after times when the software detected something unusual (e.g. student not in the picture, student looking to the side, another person presents in the image, etc.). Though several instances like these were documented by the software, upon further investigation and review of the exam recording, none showed a student to be cheating or otherwise engaged in unethical behavior. It was in 2014 when my course was piloted using virtual proctoring technology and I continue to use Respondus LockDown Browser and Respondus Monitor for all of my traditional online course exams – which now includes two universities. To date, there remains no academic integrity violations having been detected upon my review of each student's recorded exam sessions.

DOES VIRTUAL PROCTORING DETER STUDENTS FROM CHEATING?

Within the academic community, it is commonly believed that cheating is more likely to occur in online classes than face-to-face classes (Miller & Young-Jones, 2012). It is perceived that online learning courses lend themselves to cheating by nature of the classroom environment utilized (Poutre et al., 2015). Such pervasive notions exist despite a lack of empirical evidence within the literature to support this comparative idea. Baron and Crooks (2005) conducted a meta-analysis relative to academic dishonesty in online learning settings and concluded both faculty and students believed it was easier to cheat in an online environment than in a traditional classroom setting. Whereas, Watson and Sottile (2010) utilized an academic dishonesty assessment tool with undergraduate and graduate university students deducing there

were no significant differences in the student's' admission of cheating for live (face to face) and online courses. When querying the benefit of a virtual proctor in preventing students from cheating, Moten, Fitterer, Brazier, Leonard, and Brown (2013) found that 43% of their student participants thought the use of a webcam would prevent cheating. Karim, Kaminsky, and Behrend's (2014) experimental study found that remote proctoring did not directly affect test-taker reactions and performance, but it did decrease instances of cheating. Thus, technology innovations such as virtual proctoring are improving instructor confidence that online summative assessments can be as secure as those completed in the presence of a human proctor (James, 2016).

Previous research about what propels students to engage in acts of academic dishonesty support these conclusions. Lim and Coalter (2006) reported that students are less likely to cheat if they perceive faculty to hold matters of academic integrity in high regard, if faculty respond appropriately to violations, and if faculty enforce institutional policy regarding acts of dishonesty. Professors are sometimes criticized for testing students on the memorization of formulas and equations that they would have access to in the working world electronically (Hodgkinson, Curtis, Macalister, & Farrell, 2015). It has been suggested that students may feel cheating is justified in retaliation for trick questions or being tested on material not adequately covered in the course (Cizek, 1999 as cited in Hodgkinson et al., 2015). Harding (2001) found that students were less likely to cheat if the test was perceived as fair. Wilkinson (2008) concluded the top eight common reasons for students to cheat included:

> not understanding the rules of referencing, laziness or bad time management skills, easy access to material via the Internet, the student is not aware they are doing anything wrong, not feeling like they will get caught or penalties if they are caught are insignificant, wanting to get a better grade, and badly designed assessments. (p. 102)

The Internet has allowed for different methods of cheating that were impossible before its widespread popularity, but it is unclear whether students have dropped their old methods of cheating and replaced them with techniques involving technology (Heneghan, 2012). Students should be increasingly aware that they leave digital footprints in their work. For example, from my own experience shared above – when students looked up information while taking their exams, the technology utilized provided evidence through the content captured in a screenshot. Using a virtual proctor, the "eye" of the webcam documents the student's every move. If any cheating was taking place, the exam recording would offer the instructor evidence of an academic integrity violation that could then be provided as indisputable evidence should that level of inquisition be rendered.

CONCLUSIONS.

Academic dishonesty in the form of cheating on examinations remains an issue in traditional (seated) classroom environments as well as in the digital age of online learning environments. Within the academic community, there is dissonance among researchers regarding increased prevalence of cheating in online classes compared to face-to-face classes (Baron & Crooks, 2005; Miller & Young-Jones, 2012; Watson & Sottile, 2010). Students may try to cheat, regardless of being proctored by a human or by a webcam, because students who make the choice to cheat will find a method for attempting such regardless of the learning environment. While institutional efforts occur to reduce acts of academic dishonesty, the pressure on students to succeed (or the belief that cheating is an easier way out) remains a part of human nature for some college students. Educators should not assume that students know what constitutes academic integrity. They need models of good practices and guidance on appropriate digital behavior; including

needing new ways to monitor student behavior during their online course exam sessions. By instilling in college students the importance and value of ethical behavior, and using tools like virtual proctoring to convey a message of importance regarding academic integrity, institutions are then contributing to a greater ethical society.

We cannot teach behaviors of academic honesty if integrity is not part of the university's culture (Fang, 2012). Holding students accountable for their actions of violating university policies on academic integrity is demonstrating a greater societal value of personal integrity and expectation that students will perform ethically in a digital society. Being consistent with student accountability and following through with consequences has been found to be one of the most useful ways to decrease instances of academic dishonesty (Hulsart & McCarthy, 2008). Although various techniques can serve to detect or minimize cheating, universities have a greater responsibility to teach students about the ethical implications of academic cheating (Fang 2012). In the online learning environment, in particular, utilizing virtual proctoring tools with students taking exams can provide the professor reasonable assurance that academic integrity has been maintained (Cluskey et al., 2011), thus upholding academic integrity standards. As the virtual proctoring technology continues to improve, further research specifically regarding its effectiveness in deterring students from engaging in cheating behaviors while taking their online course exams is encouraged. The use of virtual proctoring technology to uphold academic integrity standards as a cornerstone for a quality educational experience while not compromising academic rigor, especially in the online learning environment, should be considered by all university administrators and instructors.

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CHAPTER 5

Personal Learning Networks: Defining and Building a PLN

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Abstract.*This article answers questions about what a personal learning network is, why you might want to build one, and how to create one for yourself to experience the benefits it has to offer.*

WHAT IS A PERSONAL LEARNING NETWORK?

One of the strengths of the digital environment is its highly networked nature and this is particularly relevant for personal learning networks where access to information and resources far surpasses anything that has come before both in terms of variety and volume. Further, in such an environment information changes more rapidly than ever before, and individuals need to engage in ongoing learning to keep pace, be it in a professional, personal or civic capacity. At one time it was adequate to read a daily newspaper, a magazine or two on special topics of interest and

perhaps belong to an organization of interest that had conferences or meetings once or twice a year. In the past, an education typically set one up for life in the work of their choice and while there were changes in fields or topics of interest, they happened slowly, in terms of years. In the digital world of the 21st century, however, this is no longer the case and information can change in days, weeks or months. An excellent tool for handling quickly expanding and growing data is to create a Personal Learning Network (PLN) (Delaney & Redman, 2014; Perez, 2012; Trust, 2012).

PLN's consist of formal and informal networks of individuals with similar goals and interests who interact using digital tools to share information, learn from each other, problem solve and collaborate (Ferguson, 2010; Nelson, 2012; Perez, 2012; Trust, 2012). They provide a vehicle for lifelong learning for both personal and professional development by enabling individuals to remain relevant in a world of rapidly changing information. While PLN's can encompass both digital and face to face connections (Perez, 2012) the focus of this discussion will be on digital learning networks and why they are significant to learning in a digital age.

In addition, PLN's provide far greater resources and information than one can muster alone or in a small group (Ross, Maninger, LaPrairie, & Sullivan, 2013). Ferguson (2010, p. 13) emphasizes this point when he says, "Before I built my professional learning network, I did all my learning by myself. If I needed to understand something for a new unit, I researched it on my own.... A PLN is a community of individuals around the world who are learning together." Even though Ferguson specifically mentions a professional learning network, the mechanics of how the network functions is much the same as in a personal learning network, just with a different focus. The key point here is the idea of "learning together". Within a networked environment there is less emphasis on singular sources of expertise and instead, a focus on dialogue and constructing knowledge as a group comes into play. This is facilitated by the speed with which conversations take place in a

digital environment where people can connect across the globe in minutes and hours instead of weeks, months or years.

While the characteristics of a PLN include fast access to massive amounts of information, a successful PLN is also characterized by participants who are highly self-motivated and curious. Without people who have a passion for learning, a PLN would not be as valuable. Further, the ability to build one's own network makes it possible to develop a highly customized approach to learning. As you will see, building a PLN gives one the freedom to develop tools, skills and knowledge that specifically suit one's learning needs.

TOOLS FOR BUILDING A PLN.

A digital PLN can reflect a variety of tools and methods, depending on individual preferences and goals. Most people will develop a variety of tools for a well-rounded learning network that meets all of their needs. An easy way to think about building a PLN is to decide what functionality you need. For example, one requirement of a PLN is to gather the information that helps one stay current with developments in a particular field or interest area. Blogs, RSS feeds, email lists, websites, news groups and podcasts can provide a steady stream of up to date information. To take advantage of the experience of a wider variety of people and practitioners, another way to connect is through social networking tools. Some are smaller and focused on a specific subject such as Edmodo, Classroom 2.0 or the Educator's PLN while others are much bigger and provide a single tool for tracking a variety of topics and information such as Twitter, Linked-in and Pinterest. Websites such as these provide an opportunity to both share and receive new information as well as find support, collaborators and thoughtful discussions.

While informal networks and learning opportunities are a hallmark of PLN's it is not uncommon to include formal learning

tools as well. Massive Open Online Courses (MOOCS) are offered by many colleges and universities. They are free and can offer opportunities to fold new topics and information into one's existing expertise. ITunes-U has a large selection of lectures from multiple colleges and universities and there are also a number of websites offering online classes on a variety of topics such as Udemy and Khan Academy. Even YouTube is a good bet for finding instructional information for specific skills and topics. In short, a PLN is what each individual wants it to be and it reflects each individual's personal passions, motivations and desire to know (Moreillon, 2016; Nelson, 2012).

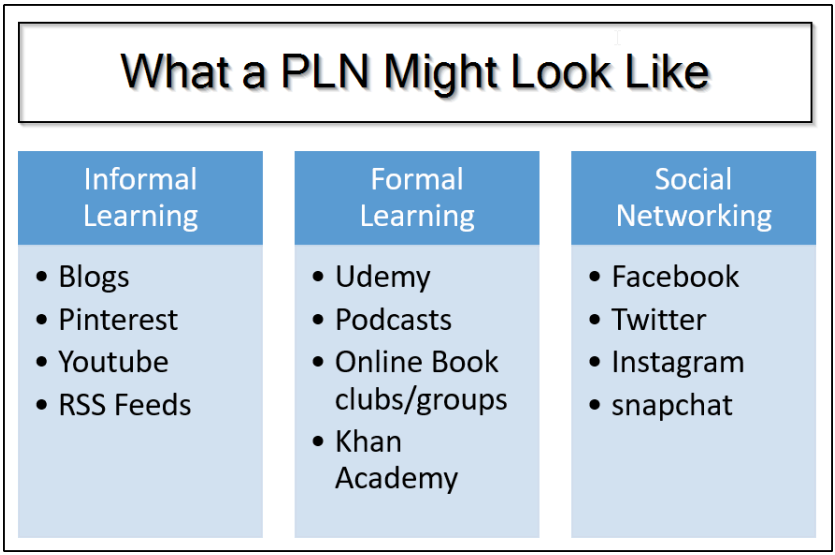

Figure 1. Categories of learning for a personal learning network (Green, 2017).

HOW TO BUILD A PLN.

Because there is such a wide variety of available tools and goals for PLN's not everyone's PLN will look the same. In addition, the tools

for inclusion are always changing and some have different features and benefits. Given the variety of different tools available, it may be intimidating to get started so this last section offers some advice about how to start and build a successful PLN. The following can suggest a typical path towards developing a PLN.

The best way to get started is to choose a specific tool and work with it until it feels comfortable (Trust, 2012). Setting up sources for current information is a good place to start and member organizations' websites have a lot to offer. For example, if one has an interest in world drumming and participating in drum circles, one might start the web site http://www.worldmusicdrumming.com/. They have a resources list, provide workshops, and they have a Facebook page. This is a great start and it connects me with an organization that caters to my personal interest and to a Facebook page where I will engage with other people who share my passion for drumming. Once I begin checking the Facebook page I find a really interesting post about an African song. A few clicks later I have landed on http://pancocojams.blogspot.com/ where I find a lengthy article about traditional afro-Cuban music.

At this point I have an organizational website with information that is updated maybe monthly, a Facebook page that appears to be very active with posts every day and a related blog that is also updated at least every couple of days. This is a really good start to a PLN. At some point I may decide to take a drumming class, either online or in person and that organization will likely have a web presence that I can add to my PLN. I may also decide I need some help with a specific instrument and seek out some YouTube videos on how to play it and I can create a personal YouTube channel with my favorite videos. The important things to remember are "don't try to read everything" and spend consistent time cultivating your sources (Perez, 2012).

A final step to consider in developing a PLN is to think about contributing your own information. The one thing that makes a PLN

an excellent way to learn is to contribute your own information and expertise. Without people who contribute, a PLN would stagnate quickly. Nobody wants to hang out on a Facebook page where the last post was three months ago. So, when developing a social networking presence don't lurk, actively participate and separate the professional from the private (Perez, 2012).

Now that one has a PLN the last tip is to tend to it. Without attention and care, the PLN will not be useful and interest will wane. Think of it as a garden. Sometimes planting, sometimes weeding, sometimes harvesting but always tending the garden so that it grows and is productive. Occasionally a resource may stop being useful so remove it. Other times a new, interesting resource can be added. Whatever the decision, keep in mind that this is your PLN and it is designed to serve your needs. There are no right and wrong ways to go about it. So, as one network source grows and matures expanding to another tool or community can help fill any gaps in the first one.

CONCLUSION.

In setting up a PLN, variety is a key factor to success. Engaging in different communities with different areas of focus will provide a rich environment for learning. This is especially easy to do in a digital environment where one literally has the entire world to draw from as a source of inspiration. There is no need to settle for sources that do not meet your needs. In the end, the important thing is that each individual can select those tools and websites that meet their learning needs. Those will not be the same for everyone and they may change over time as well.

ADDITIONAL RESOURCES.

How to build a PLN

- https://www.youtube.com/watch?v=A667plNCzwA

Characteristics of successful PLN's

- https://www.youtube.com/watch?v=5uoJwy3oa0I
- https://www.youtube.com/watch?v=fAKa5tXD8Gk

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CHAPTER 6

Digital Learners in the Workplace

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Abstract. *Training is invaluable and often required in most industries. To stay competitive, companies must be focused on keeping their employees up-to-date on the latest industry standards and compliant with new regulations. This writing discusses the types of learning and learners, the benefits and concerns of digital learning, and how these learners can embrace the digital platforms.*

INTRODUCTION.

Training is invaluable and often required in most industries. To stay competitive, leadership must be focused on keeping their employees up-to-date on the latest industry standards and compliant with new regulations. Companies know that it takes time to train employees and time is money. However, many companies do not invest enough time in allowing their employees to be strong

digital learners which leads to consequences in the workplace, such as, uninformed workers causing costly workplace errors.

The State of the Industry report released by the Association of Talent Development for 2016 states that "Organizations spent an average of $1,252 per employee on training and development initiatives in 2015" (ATD Releases 2016 State of the Industry Report, 2016). With this cost, instructor-led training averaged about "49 percent of the learning hours" (ATD Releases 2016 State of the Industry Report, 2016). The remaining 51 percent involves informal learning which includes digital learning. This last percentage represents employees taking control of their education and seeking out learning opportunities through online sources.

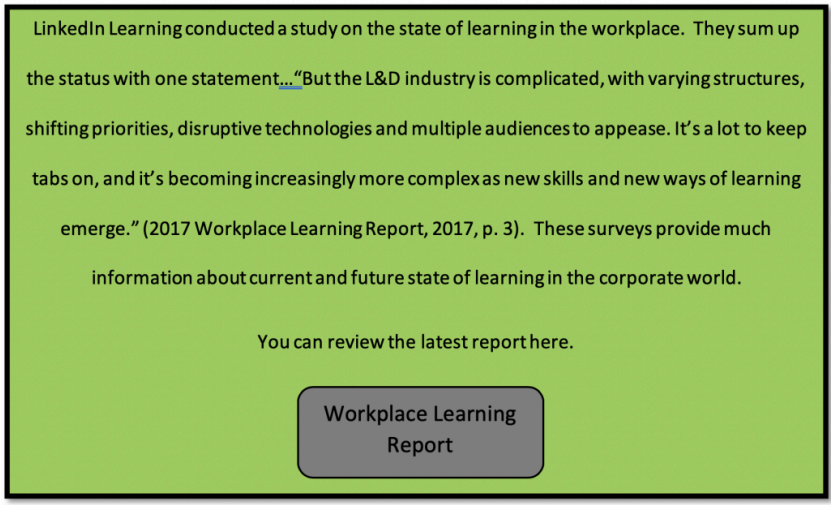
The benefits of digital learning for employers are vast, depending on how they choose/allow the use of this type of education. It is a cost-effective benefit as a one-time investment in a digital training course, and can add training for their entire workforce while supplying consistent information to all employees. For example, by utilizing computer-based trainings or videos for newly hired employees, companies can provide training with little effort, consistent messages, and on-demand learning as needed, saving the company money and time. The result is a well-prepared workforce ready to do the job at hand with the latest industry knowledge.

The old-school way of training employees is to put them in a classroom and show a slide presentation while droning on about the material. Many companies still invest in this type of learning as they feel it works for them. However, employees do not find it interesting enough to pay attention and the instructors grow tired of teaching the same material over and over. Another traditional way of educating workers is on-the-job training (OJT). Although this can be far more valuable than classroom training, OJT is not often consistent. One mentor may teach how he would do the job while another may show a completely different way. Digital

learning addresses these issues of consistency and helps ensure a systematic way of learning for new and existing employees.

Software tools have made it easy to create fun, interactive learning experiences. Images spin and turn, text flows with the audio, and the user can click on buttons and icons to learn the topic. These online courses ensure consistency in what is being taught and how it is being presented while keeping the tactile employee engaged. It eliminates the saying of "that's the way we've always done it" and embraces the concept that learning does not have to be "one-size-fits-all". The options that digital learning provides are endless and always changing for the better.

TYPES OF LEARNING



The advent of the internet has opened many doors for learners. People no longer have to visit the library to learn something new. With the click of a button or two, the information needed is readily available. Massive Open Online Courses (MOOCs) have provided a realm for users to learn college-type courses for free at their

convenience. This has been beneficial for workers and the workplace as employees can advance their knowledge on specific topics in their free time. Most corporate environments have embraced the digital tools available for their employees to learn new techniques, maintain regulatory compliance, and build their leadership skills.

Some of the many digital platforms and tools through which users can learn include YouTube, computer-based training, online forums, and application communities. There are a multitude of sites that offer online training, many of which are free or low cost. EBooks or audiobooks are an ever-evolving way of learning the most up-to-date material as these are easy to maintain with the latest information. There are even applications where the user can highlight and bookmark pages within the eBook making the virtual textbook a good alternative to the hard copy textbook.

For learners who do not have time to sit through a lecture, they can now participate in one online at their leisure. These can be pre-recorded or live. Podcasts make learning easy for users as they drive to work, exercise, or are waiting at the doctor's office. To take digital learning even further, training designers have the capabilities to create simulations for learners to apply their knowledge in a situation where mistakes are virtual and learning experiences include operating rooms, science experiments, and car repairs.

The offerings of these tools are endless with topics suitable for anyone's learning needs. Luckily, users can decide what they want to learn and when. The tools available are vast and employees are only constricted by their own schedules.

TYPES OF LEARNERS

When referring to learners in the corporate world, one must realize there are several types of learners. There are those new and

unskilled employees who require intensive training, those employees who know the job but need a refresh of knowledge, and existing and new leaders who need more coaching or want to advance their positions. There are also varying industry learners. For example, mechanics will need different training in comparison to accountants. Many companies delegate their employees to different levels and train them depending on their knowledge and experience level. No matter what kind of learner, the digital tools available can be applied to every type of learner.

Generational differences are also a part of the different types of learners. Employers appreciate employees with skills to develop themselves inexpensively and conveniently (Will Online Learning Replace the Classroom?, 2014). Baby Boomers and Gen Xers may be more hesitant to learn digitally, but Millennials and GenEdgers embrace it. Employers must recognize these generational differences and provide outlets for all of these diverse learning groups. This is often easier said than done. Developing programs that can address the learning needs of various generations is a daunting task. By taking the specific company's workforce differences into account, employee specific training can be identified and developed. This is the responsibility of the company to recognize the company and employee needs and develop appropriate learning opportunities.

Among these types of learners, there are also differing levels of engagement. When an employee is highly engaged, he or she will actively seek learning opportunities. When companies do not provide enough training, then these employees tend to go digital to see what they can learn on their own. This new-found learning can enhance these employees' existing departments or, unfortunately, take them elsewhere. The opposite extreme is the actively disengaged employee who does not want to learn much of anything for their existing job as he or she has lost motivation for the job. This employee may be using digital learning opportunities to try and enter a different field of work altogether.

Basically, there are a few types of informal learning that digital learning falls into. These include career-driven, on-demand, and social learning (Designing Learning for a 21st Century Workforce, 2012). Career-driven employees are those who want to advance in their careers and will seek out training opportunities to help with their goals. These employees often locate training sessions that will increase their own knowledge and possibly grow them into a leadership role. The on-demand learners want to learn when it is convenient for them. It may be work related or not, but they find a need to answer a question and want to search for ways to learn about it. Then there is the social learner. This type of learner will not only embrace learning from those around them, but also learning within the group. This is often due to group peer pressure. They find what they need and decide if they want to learn more. Now, to look at the method of learning in terms of "on-demand learner" or a "social learner". These would be ways a motivated learner might learn. "On-demand" learner uses technology to quickly find answers now. Whereas, a "social" learner will seek out instruction from resources within the organization. This could be to find out how this specific group does this or that. This type of information, often referred to as "tribal knowledge" can't be found through 'on-demand' technology resources. The learner has to talk to someone in the group that has the knowledge they seek. However, the social learner can decide to go online to explore similar content.

The types of learners, whether generational or situational, are going to find ways to learn what they need to maintain or grow their positions and themselves. Companies would be smart to embrace this desired learning and offer courses (along with time to complete) to their employees. The benefits are not only for the employee but also the company.

WHAT ARE THE GOOD THINGS ABOUT DIGITAL

LEARNING?

Although the traditional classroom has benefits such as focused learning time and one-on-one time with the instructor, digital learning offers the workplace more flexibility and is more astute to today's learning situations. MOOCs are readily available courses where the user can decide what they want to learn and when. Just-in-time learning provides the training these employees need at their convenience. The learners may wish to learn a new skill, enhance current knowledge, or even earn credits for a certification.

Workers are busy and on tight schedules. They don't always have time to spend in a classroom and sometimes these classes are offered at inconvenient times. With video and computer-based training courses available, they can learn when they have a few minutes to spare while waiting on a meeting or at the end of the day. Microlearning lends itself as useful for employees to educate themselves conveniently. With shortened segments, focused on specific topics, microlearning allows the employee to pick what is most important to learn at the time or to complete a small portion of a required training. The flexibility of remote learning is invaluable for learners and companies while having a manageable cost.

With this just-in-time learning, users can pace themselves according to their learning styles and abilities. Learners are in control of their own education. Having the ability to pause, rewind, and fast forward is a powerful tool for digital learners to accommodate their own learning styles. This allows the users to learn the way they prefer and when they want. For example, the learner may not be an avid reader but can listen to a podcast or audiobook with ease. Learning is relative to the situation and today's tools make it ever so convenient.

Another benefit of online learning is online forums or communities within a similar industry which provides employees with the experience and knowledge of every member. Users simply

have to submit a question, and within minutes, they will have the answers they need to do their jobs better. The time it takes to participate in these forums is well worth the return. There are some drawbacks in that the user has to stay active in order to remain up-to-date on the content being discussed. Once again, employers need to embrace this knowledge base and allow time during the day to participate.

One of the best aspects of digital learning is that it is customizable. An aerospace company can adjust a course on sales tactics to fit their sales team. An oil and gas company can create a training course that meets OSHA standards but also addresses specific issues to the company. This flexibility provides valuable training to employees rather than just completing a requirement. Also, companies no longer require dedicated instructors when working with digital material. This alleviates some of the training costs and ensures consistent training content for their employees, especially since the content can be taught to a large number of employees all at once. Remember that training takes time and time is money. There is no reason not to make it valuable for everyone.

WHAT COULD POSSIBLY GO WRONG WITH DIGITAL LEARNING?

A company must make digital tools accessible to employees while on the job, which has proven to be difficult in some industries. Digital security is a huge issue that many companies must manage in order to keep their information protected. While locking down their systems, they are also blocking users from the valuable tools only available online. Workplaces need to understand that if they want additional training sources available to employees, then they need to review their internet policies and find ways to secure access for their workers. Employees should also have the ability to

reach out to IT and ask for permission to various sites of learning as necessary.

One way around some of the digital security issues is for employers to create their own internal digital training or purchase it from a vendor to be loaded into the organization's learning platform. When companies implement computer-based training (CBT), they are offering just-in-time learning to their employees. Unfortunately, not all CBT courses are well monitored for their value and end up giving the employees a chance to simply check a box and no learning takes place. This is where traditional learning has leverage. Employees need to have time allotted to their learning throughout the workday, and employers need to recognize the importance of these learning opportunities while ensuring the provided courses are value-added.

Learners may not make as much effort while taking a course when there is little monitoring and expectations of participation. Without the human interaction, users can find it difficult to stay engaged. The courses are created at the time of usage and cannot be tailored to the user's needs. The dynamic between the learner and facilitator is lost in cyberspace. It becomes prescriptive learning that does not always work for everyone in the audience. Online learning proposes a remedy for situations with few solutions without giving the user options to apply within their own organization or situation.

Taking a CBT or webinar is convenient, but what if the learner has a question? There is no way to instantly ask the instructor. The learner can send an email and hope for a prompt answer, but that is usually not the case. The user ends up having to search for their own answers or just be satisfied with not knowing all the information.

Another situation is that digital learners must be aware that not everything is true on the internet, so they must be aware of reputable learning sites. Just because it is read on the interwebs, does not mean that it is true. How does a digital learner distinguish

between what is real and fantasy? Lots of research! Don't ever settle for one explanation on one website. The user must always be looking for alternate solutions for all problems and situations.

When companies invest time and money into digital learning, they must remain vigilant to the effectiveness of the education being received by their employees. This is not an easy task but enhances the benefits of these digital learning opportunities. Commitment to improving their workforce is the first step.

WHAT DOES THE LEARNER GET OUT OF IT?

Competition in today's workforce can be fierce. Employees must do more than obtain a degree to stay competitive. Certifications help maintain requirements, but don't always mean eligibility to do a job. Increasing one's knowledge in relevant subjects is necessary to ensure adequate employee placement. Unfortunately, not all companies offer career advancement training opportunities. Employees must take their education into their own hands and seek out training courses that will help them grow.

Building a personal learning network (PLN) can be invaluable to these workers when trying to keep up with the latest trends in their industry and trying to grow themselves personally or into a leadership position. Sites like LinkedIn, Twitter, association websites, and industry blogs are tools that all digital learners need in their PLN. With so many websites devoted to specific topics, enhancing one's PLN takes time and cannot be accomplished overnight. However, this is an easy way to keep their knowledge current and forward-looking.

Since career growth is important to most employees, digital learning offers a greater access to training opportunities for the user. Utilizing digital learning options can help a worker grow into a new role, officially or not. With all of the digital learning options,

users can determine what material they prefer to learn and follow it to more learning material suiting their styles.

Ultimately, digital learners obtain the knowledge they want out of the learning situations they are placed in. Experienced learners will know how to obtain the information they are seeking and where to apply this knowledge.

CLOSING.

Companies have a choice: they can choose to stay in the past and only utilize classroom training while not embracing digital learning, or they can welcome the new age of learning along with the benefits that it affords. If they choose not to accept this renewed way of learning, then they could end up with a disengaged workforce who is not learning the necessary skills to stay current in today's trades. Having employees who know what they want to learn and how to achieve it is invaluable. Employers will be wise to listen and observe what is happening in their workplace and embrace the changes that are occurring.

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CHAPTER 7

Digital literacies and the skills of the digital age

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Oklahoma State University

Abstract – *This chapter is intended to provide a framework and understanding of digital literacy, what it is and why it is important. The following pages explore the roots of digital literacy, its relationship to language literacy and its role in 21st century life.*

INTRODUCTION

Unlike previous generations, learning in the digital age is marked by the use of rapidly evolving technology, a deluge of information and a highly networked global community (Dede, 2010). In such a dynamic environment, learners need skills beyond the basic cognitive ability to consume and process language. In other words: To understand what the characteristics of the digital age, and of digital learners, means for how people learn in this new and changing landscape, one may turn to the evolving discussion of

literacy or, as one might say now, of digital literacy. The history of literacy contextualizes digital literacy and illustrates changes in literacy over time. By looking at literacy as a historical phenomenon, the characteristics of which have evolved over time, we can glean the fundamental characteristics of the digital age. Those characteristics in turn illuminate the skills needed in order to take advantage of digital environments. The following discussion is an overview of digital literacy, its essential components and why it is important for learning in a digital age.

MOVING FROM LITERACY TO DIGITAL LITERACY

Literacy refers to the ability of people to read and write (UNESCO, 2017). Reading and writing then, is about encoding and decoding information between written symbols and sound (Resnick, 1983; Tyner, 1998). More specifically, literacy is the ability to understand the relationship between sounds and written words such that one may read, say and understand them (UNESCO, 2004; Vlieghe, 2015). Literacy is often considered a skill or competency and is often referred to as such. Children and adults alike can spend years developing the appropriate skills for encoding and decoding information.

Over the course of thousands of years, literacy has become much more common and widespread with a global literacy rate ranging from 81% to 90% depending on age and gender (UNESCO, 2016). From a time when literacy was the domain of an elite few, it has grown to include huge swaths of the global population. There are a number of reasons for this, not the least of which are some of the advantages the written word can provide. Kaestle, (1985) tells us that "literacy makes it possible to preserve information as a snapshot in time, allows for recording, tracking and remembering information, and sharing information more easily across distances among others" (p. 16). In short, literacy led "to the replacement

of myth by history and the replacement of magic by skepticism and science. Writing allowed bureaucracy, accounting, and legal systems with universal rules and has replaced face-to-face governance with depersonalized administration" (Kaestle, 1985, p. 16). This is not to place a value judgement on the characteristics of literacy but rather to explain some of the many reasons why it spread.

There are, however, other reasons for the spread of literacy. In England, throughout the middle ages literacy grew in part, because people who acquired literacy skills were able to parlay those skills into work with more pay and social advantages (Clanchy, 1983). The great revolutions of the 19th and 20th centuries also relied on leaders who could write and compatriots who could read as a way to spread new ideas beyond the street corners and public gatherings of Paris, Berlin, and Vienna. Literacy was perceived as necessary for spreading information to large numbers of people. In the 1970's Paulo Freire insisted that literacy was vital for people to participate in their own governance and civic life (Tyner, 1998). His classic "Pedagogy of the Oppressed" begins from the premise that bringing the traditional illiterate and uneducated into learning situations as partners with their teachers awakens the critical conscience necessary as a foundation for action to foment change (Freire, 1973). UNESCO (2004) also acknowledges the role that literacy plays in enabling populations to effect change and achieve social justice aims. They speak even more broadly, moving beyond the conditions necessary for revolution, contending that literacy is a fundamental right of every human being, providing employment opportunities, and the fundamental skills necessary to accrue greater wealth and improve one's quality of life.

Although the benefits of literacy were a driving force in its spread, technological advances also enabled the spread of literacy to greater and greater numbers of people. From stamped tokens, tally sticks and clay tablets, to ancient scrolls, handwritten volumes, the printing press, typewriters, and finally computers, technology

is largely responsible for driving the evolution of literacy into the particular forms of encoding and decoding information associated with the digital age. Technology has made it possible for literacy to move from the hands of the few to the hands of the masses and to morph into a digital environment with characteristics extending far beyond anything that has been seen before.

Not only did computers and electronic technology deliver literacy into the hands of many but also created an environment that made it possible to store vast amounts of information. Books and libraries led the way to making information easily available to the public, but within the age of computers and the internet the volume of accessible information is larger than ever, more readily available than ever, and changing more quickly than ever before. In the early 21st century, technology continues to develop more quickly than at any time in the past creating an environment that is constantly changing. These changes contribute to the need for different skills beyond traditional literacy skills also called *new media literacy* (Jenkins, 2018). For a short video on the reasons why digital literacy is important visit "The New Media Literacies" located on YouTube.com and created by the research team at Project New Media Literacies.

LITERACY IN THE DIGITAL AGE

If literacy involves the skills of reading and writing, digital literacy requires the ability to extend those skills in order to effectively take advantage of the digital world (ALA, 2013). More general definitions express digital literacy as the ability to read and understand information from digital sources as well as to create information in various digital formats (Bawden, 2008; Gilster, 1997; Tyner, 1998; UNESCO, 2004). Developing digital skills allows digital learners to manage a vast array of rapidly changing information and is key to both learning and working in an evolving digital landscape (Dede,

2010; Koltay, 2011; Mohammadyari & Singh, 2015). As such, it is important for people to develop certain competencies specifically for handling digital content.

People who adapt well to the digital world exhibit characteristics enabling them to develop and maintain digital literacy skills. Lifelong learning is a key characteristic necessary for handling rapid changes in technology and information and thus, critical to digital literacy. Successful digital learners have a high level of self-motivation, a desire for active modes of learning and they exercise the ability to learn how to learn. Maintaining and learning new technical skills also benefits learners in the digital age and an attitude of exploration and play will help learners stay engaged and energized in a world where speed of change and volume of information could otherwise become overwhelming (Dede, 2010; Jenkins, 2018; Visser, 2012). A final characteristic of a digital learner includes the ability to engage in a global network with a greater awareness of one's place and audience in that network. Together, these characteristics of the digital age guide us in understanding what traits a learner will require to be successful in the digital environment. The following section will help understand what lies at the intersection of digital skills and traits of successful digital learners by reviewing existing digital literacy frameworks.

REVIEWING EXISTING FRAMEWORKS FOR DIGITAL LITERACY/IES

Digital literacy is alternately described as complicated, confusing, too broad to be meaningful and always changing (Heitin, 2016; Pangrazio, 2014; Tyner, 1998; Williams, 2006). Due to this confusion, some feel it best to completely avoid the term digital literacy altogether and instead opt for the terms such as digital competencies (Buckingham, 2006), 21st century skills (Williamson, 2011) or digital skills (Heitin, 2016). Another way to sort out the

confusion is to look at digital literacy as multiple literacies (Buckingham, 2006; Lankshear & Knobel, 2008; UNESCO, 2004)

Here, I take the latter approach and look at digital literacy as a collection of literacies each of which play a significant role in learning in a digital world. Ng (2012), operationalizes digital literacy as a framework of multiple, specific competencies which, when combined, form a cohesive collection of skills. By taking this approach, we link the characteristics of the digital environment as well as those of the digital learner not to a single digital skill but rather a set of digital literacy practices. In this way, we can consider the various skills needed to navigate the digital world in an organized and consistent manner.

Ng (2012) proposes a three-part schema for discussing the overlapping functional characteristics of a digitally competent person: technical, cognitive, and social (see Figure 1).

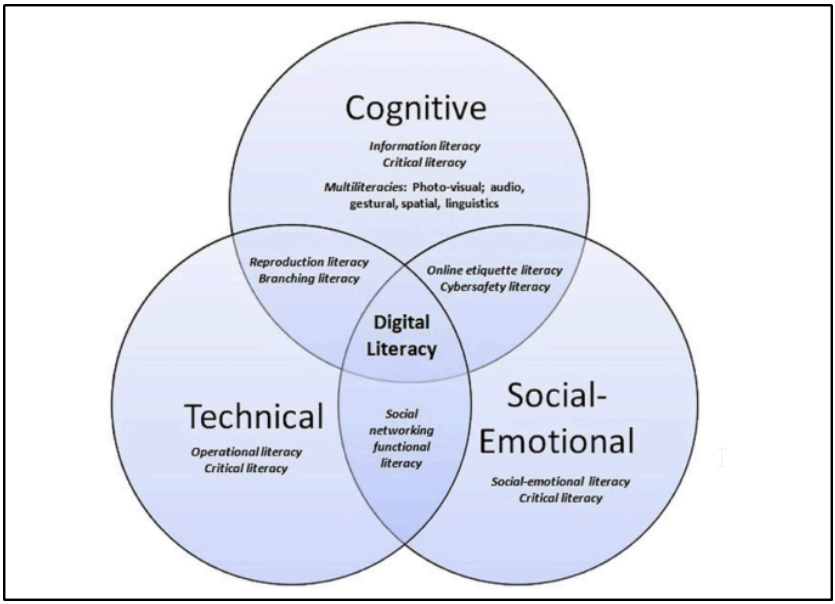

Figure 1. Underlying foundation of digital literacy includes technical, cognitive and social skills (Ng, 2012).

Technical literacy, also referred to as operational literacy, refers to the mastery of technical skills and tasks required to access and work with digital technology such as how to operate a computer; use a mouse and keyboard; open software; cut, copy and paste data and files, acquire an internet connection and so on (Lankshear & Knobel, 2008). The cognitive area of digital literacy focuses on activities such as critical thinking, problem solving and decision making (Williamson, 2011) and includes the ability to "evaluate and apply new knowledge gained from digital environments"(Jones-Kavalier & Flannigan, 2006, p. 5). The third of Ng's three categories – social literacies – covers a wide range of activities which together constitute the ability to communicate in a digital environment both socially and professionally, understand cyber security, follow "netiquette" protocols, and navigate discussions with care so as not to misrepresent or create misunderstandings (Ng, 2012). Of particular note, Ng captures the essence of digital literacy by showing how digital literacy exists at the intersection of the technical, cognitive and social aspects of literacy which are referred to as dimensions. Ng's framework is not, however, a digital literacy framework itself. Instead it provides a vehicle for exploring the various components of digital literacy at a conceptual level while remaining clear that the individual skills are at all times connected to and dependent upon each other.

There are a number of organizations that publish their own framework for digital literacies including the International Society for Technology in Education ICT Skills (ISTE), the American Association of College and Universities (AACU), the Organization for Economic Cooperation and Development (OECD), the American Library Association (ALA), and the Partnership for 21st Century Skills among others (Dede, 2010). The digital frameworks exhibit many similarities, and a few differences. There are some differences in the terminology and organization of these frameworks, but they all include similar skills. What follows is a

brief overview of the different digital frameworks. See Figure 2 for a composite of these frameworks.

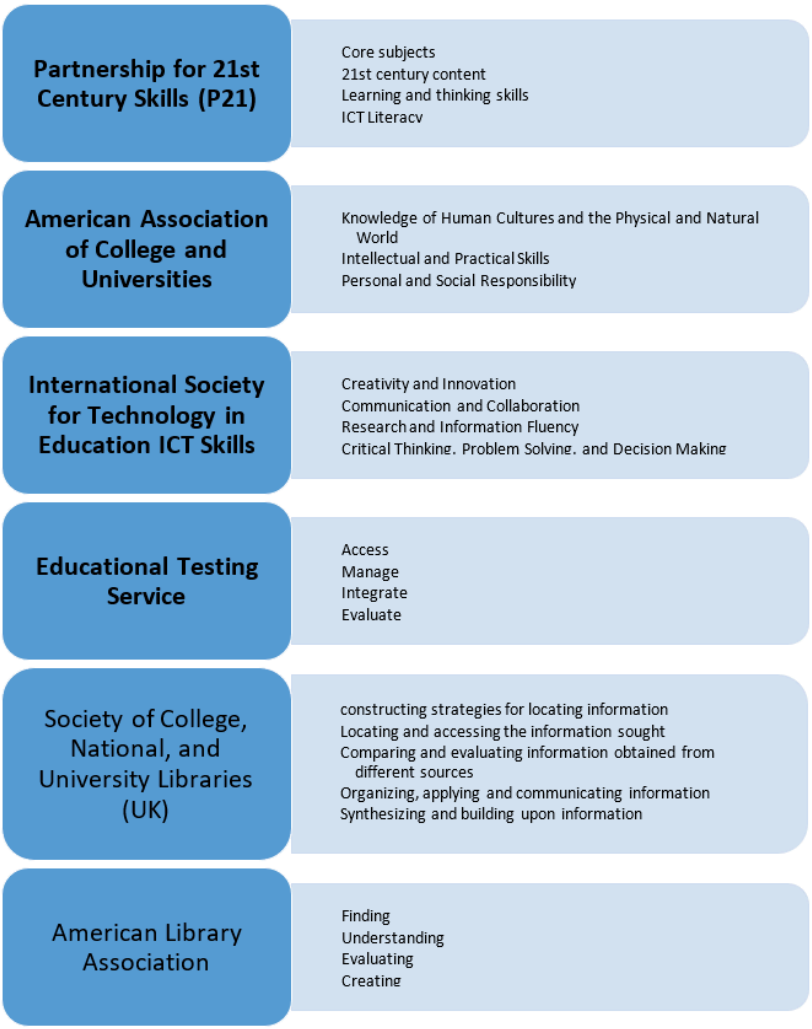

Figure 2. Major Frameworks for 21st Century Skills (American Library Association, 2013; Dede, 2010; SCONUL, 2016; Vockley & Lang, 2008)

Each of the frameworks come from a slightly different angle and will at times reflect the background from which they come. The American Library Association (ALA) framework evolved out of the information literacy tradition of libraries, while the American Association of College and Universities (AACU) and the Society of College and University Libraries (SOCNUL) evolved from higher education perspective, the Partnership for 21st century learning addresses K-12 education, and the ISTE is steeped in a more technical tradition. Even with these different areas of focus the components of each framework are strikingly similar although some in more detail than others. Three of the six specifically address the skills necessary for accessing, searching and finding information in a digital environment while the other three have broader categories in which one might expect to find these skills including, research and information fluency, intellectual skills, and ICT literacy. Cognitive skills required for digital literacy are also covered by all of the frameworks in varying degrees of specificity. Among them one will find references to evaluating, understanding, creating, integrating, synthesizing, creativity and innovation. Finally, four of the six digital frameworks pay homage to the necessity of solid communication skills. They are in turn, referred to as life skills, personal and social responsibility, communication, collaboration, digital citizenship and collective intelligence.

What seems oddly missing from this list of skills is the technical component which only appears explicitly in the ISTE list of skills. The partnership for 21st century learning uses ICT literacy as a designation for the ability to use technology and the ALA, in discussing its framework, makes it clear that technical proficiency is a foundational requirement for digital literacy skills. Even with these references to technical skills the digital literacy frameworks are overwhelmingly partial to the cognitive and social focus of digital skills and technical proficiency tends to be glossed over compared to the other dimensions. Even though technical skills receive relatively little attention by comparison we will assume for

this discussion, technical skills are a prerequisite to the other digital skills, and we will look more carefully at each of them in the next section.

To fully understand the many digital literacies, we will use the ALA framework as a point of reference for further discussion using the other frameworks and other materials to further elucidate each skill area. The ALA framework is laid out in terms of basic functions with enough specificity to make it easy to understand and remember but broad enough to cover a wide range of skills. The ALA framework includes the following areas:

- Finding,
- Understanding,
- Evaluating,
- Creating, and
- Communicating
  (American Library Association, 2013).

FINDING

Finding information in a digital environment represents a significant departure from the way human beings have searched for information for centuries. The learner must abandon older linear or sequential approaches to finding information such as reading a book, using a card catalog, index or table of contents and instead use lateral approaches like natural language searches, hypermedia text, keywords, search engines, online databases and so on (Dede, 2010; Eshet, 2002). The shift from sequential to lateral involves developing the ability to construct meaningful search parameters (SCONUL, 2016) whereas before, finding the information would have meant simply looking up page numbers based on an index or sorting through a card catalog. Although finding information may depend to some degree on the search

tool being used (library, internet search engine, online database, etc.) the search results also depend on how well a person is able to generate appropriate keywords and construct useful Boolean searches. Failure in these two areas could easily return too many results to be helpful, vague or generic results, or potentially no useful results at all (Hangen, 2015).

Not immediately obvious, but part of the challenge of finding information is the ability to manage the results. Because there is so much data, changing so quickly, in so many different formats it can be challenging to organize and store it in such a way as to be useful. SCONUL (2016) talks about this as the ability to organize, store, manage and cite digital resources while the Educational Testing Service also specifically mentions the skills to access and manage information. Some ways to accomplish these tasks is through the use of social bookmarking tools such as Diigo, clipping and organizing software such as Evernote and OneNote, and bibliographic software. Many sites, such as YouTube allow individuals with an account to bookmark videos as well as create channels or collections of videos for specific topics or uses. Other websites have similar features.

UNDERSTANDING

Understanding in the context of digital literacy perhaps most closely resembles traditional literacy in so much as it too, is the ability to read and interpret text (Jones-Kavalier & Flannigan, 2006). In the digital age, however, the ability to read and understand extends much further than text alone. For example, searches may return results with any combination of text, video, sound, and audio as well as still and moving pictures. As the internet has evolved, there have evolved a whole host of visual languages such as moving images, emoticons, icons, data visualizations, videos and combinations of all of the above. Lankshear & Knoble, (2008) refer to these modes of communication as “post typographic textual

practice". Understanding the variety of modes of digital material may also be referred to as multimedia literacy (Jones-Kavalier & Flannigan, 2006), visual literacy (Tyner, 1998), and digital literacy (Buckingham, 2006).

EVALUATING

Evaluating digital media requires competencies ranging from evaluating the importance of a piece of information to determine its accuracy and its source. Evaluating information is not new to the digital age, but the nature of digital information can make it more difficult to understand who the source of information is and whether it can be trusted (Jenkins, 2018). When there is abundant and rapidly changing data across heavily populated networks, anyone with access can generate information online, making decisions about its authenticity, trustworthiness, relevance, and significance daunting. Learning evaluative digital skills means learning to ask questions about who is writing the information, why they are writing it, and who the intended audience is (Buckingham, 2006). Developing critical thinking skills is part of the literacy of evaluating and assessing the suitability for the use of a specific piece of information (SCONUL, 2016).

Looking for secondary sources of information can help confirm the authenticity and accuracy of online data and researching the credentials and affiliations of the author is another way to find out more about whether an article is trustworthy or valid. One may find other places the author has been published and verify they are legitimate. Sometimes one may be able to review affiliated organizations to attest to the expertise of the author such finding out where an employee works if they are a member of a professional organization or a leading researcher in a given field. All of these provide essential clues for use in evaluating information online.

CREATING

Creating in the digital world makes explicit the production of knowledge and ideas in digital formats. While writing is a critical component of traditional literacy, it is not the only creative tool in the digital toolbox. Other tools are available and include creative activities such as podcasting, making audio-visual presentations, building data visualizations, 3D printing, writing blogs and new tools that haven't even been thought of yet. In short, all formats in which digital information may be consumed, a digitally literate individual will also want to be able to use in the creation of a product. A key component of creating with digital tools is understanding what constitutes fair use and what is considered plagiarism. While this is not new to the digital age, it may be more challenging to find the line between copying and extending someone else's work.

In part, the reason for the increased difficulty of finding the line between plagiarism and new work is the "cut and paste culture" of the internet referred to as "reproduction literacy" (Eshet 2002, p.4) also referred to as appropriation in Jenkins' New Media Literacies (Jenkins, 2018). The question is, what can one change and how much can one change work without being considered copying? This skill requires the ability to think critically, evaluate a work and make appropriate decisions. There are tools and information to help understand and find those answers such as the creative commons. Learning about these resources and learning how to use them is part of this digital literacy.

COMMUNICATING

Communicating is the final category of digital skills in the ALA digital framework. The capacity to connect with individuals all over the world creates unique opportunities for learning and sharing information for which developing digital communication skills is

vital. Some of the skills required for communicating in a digital environment include digital citizenship, collaboration, and cultural awareness. This is not to say that one does not need to develop communication skills outside of the digital environment but that the skills required for digital communication go beyond what is required in a non-digital environment. Most of us are adept at personal, face to face communication but digital communication needs the ability to engage in asynchronous environments such as email, online forums, blogs and social media platforms where what we say can't always be deleted but can be easily misinterpreted. Add that to an environment where people number in the millions and the opportunities for misunderstandings and cultural miscues are much more likely.

The communication category of digital literacies covers an extensive array of skills above and beyond what one might need for face to face interactions. It includes competencies around ethical and moral behavior, responsible communication for engagement in social and civic activities (Adam Becker et al., 2017), an awareness of audience and an ability to evaluate the potential impact of one's actions online. It also includes skills for handling privacy and security in online environments. These activities fall into two main categories of activity including digital citizenship and collaboration.

Digital citizenship refers to one's ability to interact effectively in the digital world. Part of this skill is good manners, often referred to as "netiquette. There is a level of context which is often missing in digital communication due to physical distance, lack of personal familiarity with people online and the sheer volume of people who may come in contact with our words. People who know us well may understand exactly what we mean when we say something sarcastic or ironic, but those and other vocal and facial cues are missing in most digital communication making it more likely we will be misunderstood. Also, we are also more likely to misunderstand or be misunderstood if we remain unaware of cultural differences amongst people online. So, digital citizenship includes an

awareness of who we are, what we intend to say and how it might be perceived by other people we do not know (Buckingham, 2006). It is also a process of learning to communicate clearly and in ways that help others understand what we mean.

Another key digital skill is collaboration, and it is essential for effective participation in digital projects via the internet. The internet allows people to engage with others we may never see in person and work towards common goals be they social, civic or business oriented. Creating a community and working together requires a degree of trust and familiarity that can be difficult to build given the physical distance between participants. Greater awareness must be paid to inclusive behavior, and more explicit efforts need to be made to make up for perceived or actual distance and disconnectedness. So, while the promise of digital technology to connect people is impressive it is not necessarily an automatic transition, and it requires new skills.

PARTING THOUGHTS.

It is clear from our previous discussion of digital literacy that technology and technical skills underpin every other digital skill. A failure to understand hardware, software, the nature of the internet, cloud-based technologies and an inability to learn new concepts and tools going forward handicaps one's ability to engage with the cognitive and social literacies. While there are sometimes tacit references to technical skills and ability, extant digital literacy frameworks tend to focus more on the cognitive and social aspects of digital environments. There is an implied sense that once technical skills are learned, we the digitally literate person can forget about them and move on to the other skills. Given the rapid pace of technological change in the last 40 years, however, anyone working in a digital environment would be well advised to keep in mind that technical concepts and tools continue to develop. It

does not seem likely that we will ever reach a point where people can simply take technological skills for granted and to do so would undermine our ability to address the other digital skills.

Another way to think of this is to recognize that no matter what the skill, none of them operate independently of one another. Whether searching, creating, evaluating, understanding or communicating, it is a combination of skills (or literacies) that allow us to accomplish our goals. Thinking critically, and evaluating information and sources leads to sound decision-making. Understanding and synthesizing information is necessary for creating and again the technical tools are necessary for completing the product. Finding information is of little use if one is unable to analyze its usefulness and creating a great video or podcast will not mean much if one is unable to navigate social and professional networks to communicate those works to others. If only understood in isolation, digital literacies have little meaning and can be of little use in approaching digital environments.

Ng's (2012) conceptual framework reminds us that digital literacy is that space where technical, cognitive and social literacies overlap. A digital skill is not the same thing as digital literacy but the two are fully intwined. Acquiring digital skills is only the beginning of a study of digital literacies, however, and it would be a mistake to stop here. Furthermore, digital literacies span multiple areas including both the cognitive and the social. The real value of digital literacy lies in understanding the synergistic effect of individual digital literacy skills integrated with sets of competencies that enable one to work effectively in the digital world.

LEARNING ACTIVITIES.

Literacy Narratives are stories about reading and composing in any form or context. They often include poignant memories that involve a personal experience with literacy. Digital literacy

narratives can sometimes be categorized as narratives that focus on how the writer came to understand the importance of technology in his/her life or teaching pedagogy. More often, they are simply narratives that use a medium beyond the print-based essay to tell the story.

Kairos: A Journal of Rhetoric, Technology, and Pedagogy, 20(1), available at http://kairos.technorhetoric.net/20.1/praxis/bourelle-et-al

1. Combining both aspects of the genre, write a piece based on your technological literacy, choosing a medium you feel best conveys the message you want to share with your audience.
2. Find and read 2-4 literacy narratives online that emphasize the use of technology and write a short reflection that discusses the main digital literacies used, summarizes the main points made and describes the elements you felt were most important. Also, describe any digital literacy skills you utilized to complete the assignment.
3. Create your literacy narrative that tells the story of a significant experience of your own with digital literacy. Use a multi-modal tool that includes audio and images or video. Share with your classmates and discuss the most important ideas you noticed in others' narratives.
4. Compare two of the literacy frameworks in Figure 2. How are they alike? How are they different? Do you like one better than the other? Why or Why not?

RESOURCES.

1. Multi-Media Resources about Digital Literacy
    - Digital Literacy and why it matters –

https://www.youtube.com/watch?v=p2k3C-iB88w

- The essential elements of digital literacies https://www.youtube.com/watch?v=A8yQPoTcZ78
- What is a Literacy Narrative? https://www.youtube.com/watch?v=_Mhl2j-cpZo
- Benji Bissman's computer literacy narrative – http://daln.osu.edu/handle/2374.DALN/2327 *[site can't be reached, KE 6.12.24]*

2. Digital Literacy Standards
    - Global Digital Literacy Council *[page not found, KE 6.12.24]*
    - International Society for Technology in Education
3. Literacy Resources and Training
    - Information and Communication Technologies *[site can't be reached, KE 6.12.24]*
4. Resource Library
    - Education Development Center, Inc.
5. Visual Literacy Resources
    - International Visual Literacy Association
6. Digital Literacy Fundamentals
    - http://mediasmarts.ca/digital-media-literacy-fundamentals/digital-literacy-fundamentals
7. Microsoft Digital Literacy

- https://www.microsoft.com/en-us/digitalliteracy/overview.aspx *[page not found, KE 6.12.24]*

8. 12 Essentials of Digital Literacy

   - .http://info.learning.com/hubfs/Corp_Site/Sales%20Tools/12EssentialSkills_Brochure_Apr16.pdf *[page not found, KE 6.12.24]*

9. US Digital Literacy

   - http://www.digitalliteracy.us

10. What are literacy skills?

    - https://k12.thoughtfullearning.com/FAQ/what-are-literacy-skills

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CHAPTER 8

Playful Approaches to Learning

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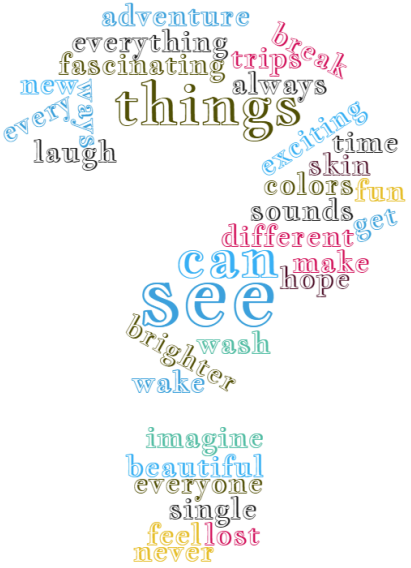
Learning objectives

Upon reading this chapter, students should be able to do the following:

- Provide a scholarly definition of play.
- Distinguish between key elements of play and work.
- Discuss how playful approaches might impact creativity.
- Articulate challenges inherent in playful activities as incorporated into educational spaces.
- Relate intentional play to personal learning experiences.
- Explicate (develop) a playful process for exploration of a digital resource, identifying, in particular, the intentional incorporation of play cues.



Kennedy and Abby reminisced as they packed Abby's bags for transition to University. For over a decade, their moms had dragged them along on summer cross-country road trips.

> *"Remember when we got kicked out of the volcano?"*
> *"Remember that town with donkeys just loose in the street?"*
> *"Remember when we got kicked out of Canada?"*
> *"Remember when the bear took your backpack?"*
> *"Remember the glacier lake and salad margaritas after the accidental six mile hike?"*

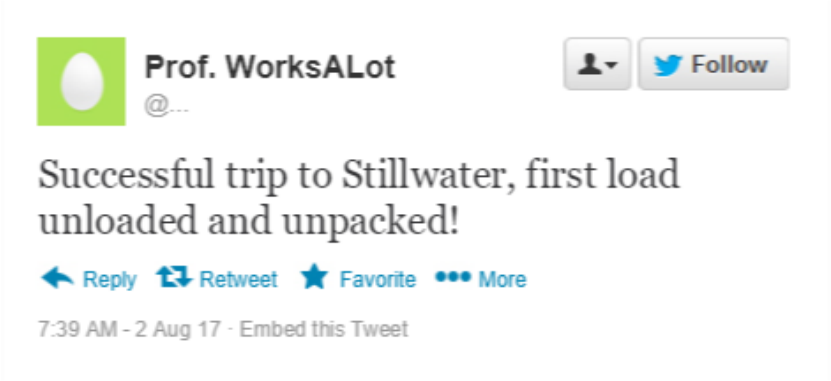
And the remember that bookended all their remembers–

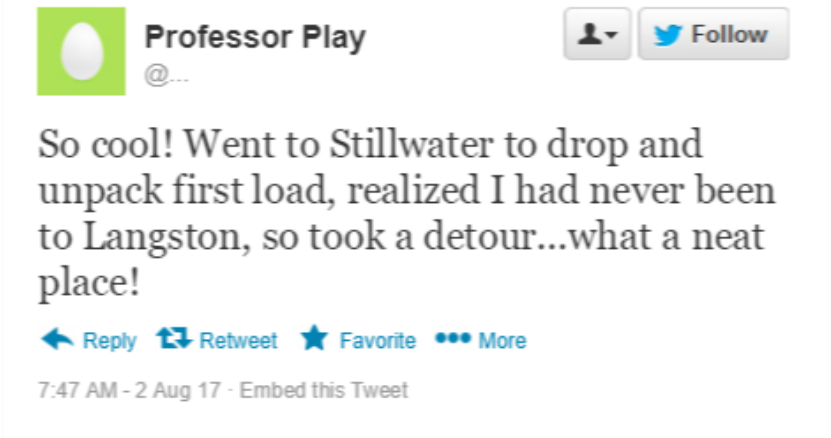
> *"Remember when your mom threw the map out of the car window?"*

INTRODUCTION: WHAT IS PLAY? AND WHY DO WE CARE?

The difference between play and work has been defined, quite simply, as intent (Harrison & West, 2014; Lotts, 2016; Schultz, Geithner, Woelfel, & Kryzwinkski, 2015). Participation in work is directed by external influences guiding the actor toward specific objectives; work has a clearly defined goal with a measurable outcome (Harrison & West, 2014; Lotts, 2016; Schultz, Geithner, Woelfel, & Kryzwinkski, 2015). Play, in contrast, is identified as an intrinsically motivated, "apparently purposeless" (Harrison & West, 2014, p. 72) practice through which humans "learn how to cope with a complex environment" (Harrison & West, 2014; Lotts, 2016; Schultz, Geithner, Woelfel, & Kryzwinkski, 2015, p. 236). An approach to the construction of learning spaces guided by play theory may improve creativity, innovation, and strategic thinking (Harrison & West, 2014; Lotts, 2016; Schultz, Geithner, Woelfel, & Kryzwinkski, 2015). Effective educators can leverage the strengths of the digital age classroom to facilitate attitudes of play.

Play with some of the digital resources found on this page. Create a post, image, or story describing an activity from both a work and play perspective. Stretch Activity: How did having a suggested end goal impact your playful approach to the resources? Would your experience have been different had you not been presented with an end goal?





ORGANIZATIONS AND EDUCATIONAL SYSTEMS EMPLOY PLAY.

Through play, participants may consider and progress toward objectives considered work related while employing techniques considered applicable to play (Statler, Heracleous, & Jacobs, 2011).

To ease anxiety possibly associated with the pressure to create (Lotts, 2016), organizations and educational systems cultivate attitudes of play by incorporating things and processes generally found outside the adult workplace (Statler et al., 2011). Physical space may include Lego bricks, corporate activities might include physical movement involved in meaning construction (Statler et al., 2011), and meetings might include snacks and toys (Harrison & West, 2014). These "play cues" (Harrison & West, 2014, p. 71) may trigger attitudes in participants empowering them to channel the recursive, engaged, and fun elements of play (Harrison & West, 2014; Lotts, 2016; Statler et al., 2911). Work related objectives, those considered serious, are accomplished through the engagement of techniques more generally associated with play (Statler et al., 2011).

WHY CULTIVATE AN ATTITUDE OF PLAY?

Play is considered a means through which technology can be integrated into learning environments, strengthening student proficiency in the development of media skills considered crucial "in an age of information and innovation" (Randolph, Kangas, Ruokamo, & Hyvonen, 2016, p. 418). Engaged through play, participants may feel permission to "behave in new ways" (Harrison & West, 2014, p. 75). Students may be more comfortable engaging in novel behavior and courageous about opening themselves up to variation (Statler et al., 2011). This combination of recursive play process and goal-oriented work facilitates results achieved in a "goal oriented but playful way" (Statler et al., 2011, p. 239). Incorporation of play taps into intrinsic motivation (Harrison & West, 2014), broadens opportunity for novel behavior, and releases new ideas (Schulz et al. 2015).

Playful approaches support development of creative skills (Davies, Jindal-Snape, Collier, Digby, Hay, & Howe, 2013).

PLAY IN THE DIGITAL AGE CLASSROOM

Christopher Ward (2009) used information and communications technology (ICT) to incorporate playful approaches into a secondary level music-making classroom to investigate the impact of play on creativity. He found that the instant feedback inherent in the digital resources enhanced students' intrinsic motivation and allowed students to "capitalize on spontaneous and accidental action" (Ward, 2009, p. 155). Guided by Miles Davis' admonition "Do not fear mistakes, there are none" (Ward, 2009, p. 155), students undertook playful explorations with the attitude that nothing accomplished their discoveries and work would not be considered wrong, but might rather be embraced as different. Over the course of the project, Ward (2009) provided sheets offering guidance, but noted they were rarely used by the students, as students playfully preferred to "experiment until something happened that they

liked" (p. 163). As students created pieces departing from traditional tonality and re-coded traditional symbols for new use it became apparent that both the playful approach and the use of ICT served to free students' creativity and empower them as interactive thinkers (Ward, 2009). Ward explained "The students became self-motivating, and were captivated by their 'play-art'" (2009, p. 154).

WHAT HAPPENS NEXT?

Creative skill development can be enhanced through classroom incorporation of playful approaches (Davies et al, 2013). Play is inherent in human nature; educators can incorporate a variety of pedagogical strategies to capitalize on the strengths of this innate approach (Broadhead & van der Aalsvoort, 2009), facilitating playful, active, and participatory experiences and empowering creative learning processes (Randolph et al, 2016). "In a world of digital culture and new technology, novel ways of using information and playful and creative thought have become of paramount importance" (Randolph et al, 2016, p. 419). Technology and digital media help establish the 21st century as an "age of wonder" (Tan, 2015, p. 161). Resources available in the digital age classroom combined with attitudes of play can quicken the minds of students as they experience their world.

Identify a digital resource to present for your students' playful exploration. What cues might you provide to facilitate their playful approach? Will you suggest an end goal? Why or why not? What challenges might a playful approach present in a necessarily structured learning environment? How can those be addressed? Using Canva.com (or other resources you may playfully have discovered) to create an infographic describing your activity. Address the above questions in a way that others might be able to adopt your approach. Check in with your colleagues, enjoy each

other's ideas, and share what about those ideas you might incorporate into your classroom.

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CHAPTER 9

The Digital Divide

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Abstract: *A digital divide is an economic and social inequality regarding access to, use of, or impact of information and communication technologies. However, economic or other resource gaps, differences in cultural tastes and preferences of different social classes are factors contributing to disparities in internet use. The digital divide arguably reflects structural factors in advanced societies that give rise to social inequalities in general. This chapter begins with an introduction to the history of expanded internet access across the U.S. and then covers who the digital divide consequentially affected by the expended access. Finally, organizations and resources designed to aid in the closing of the digital divide are presented.*

INTRODUCTION

A digital divide is an economic and social inequality regarding access to, use of, or impact of information and communication technologies (U.S. Department of Commerce, 1995). Existing

literature indicates that the digital divide at the individual level springs from many different sources. Comparisons between educational and occupational groups, income brackets, age groups, and genders have revealed systematic variation in both internet access and the frequency of its use (Hampton, 2010; Lehdonvirta and Räsänen, 2011; Rice and Katz, 2003; van Deursen and van Dijk, 2014). Economic or other resource gaps, differences in cultural tastes and preferences of different social classes are factors contributing to disparities in internet use (Emmison & Frow, 1998; Hargittai & Hsieh, 2010).

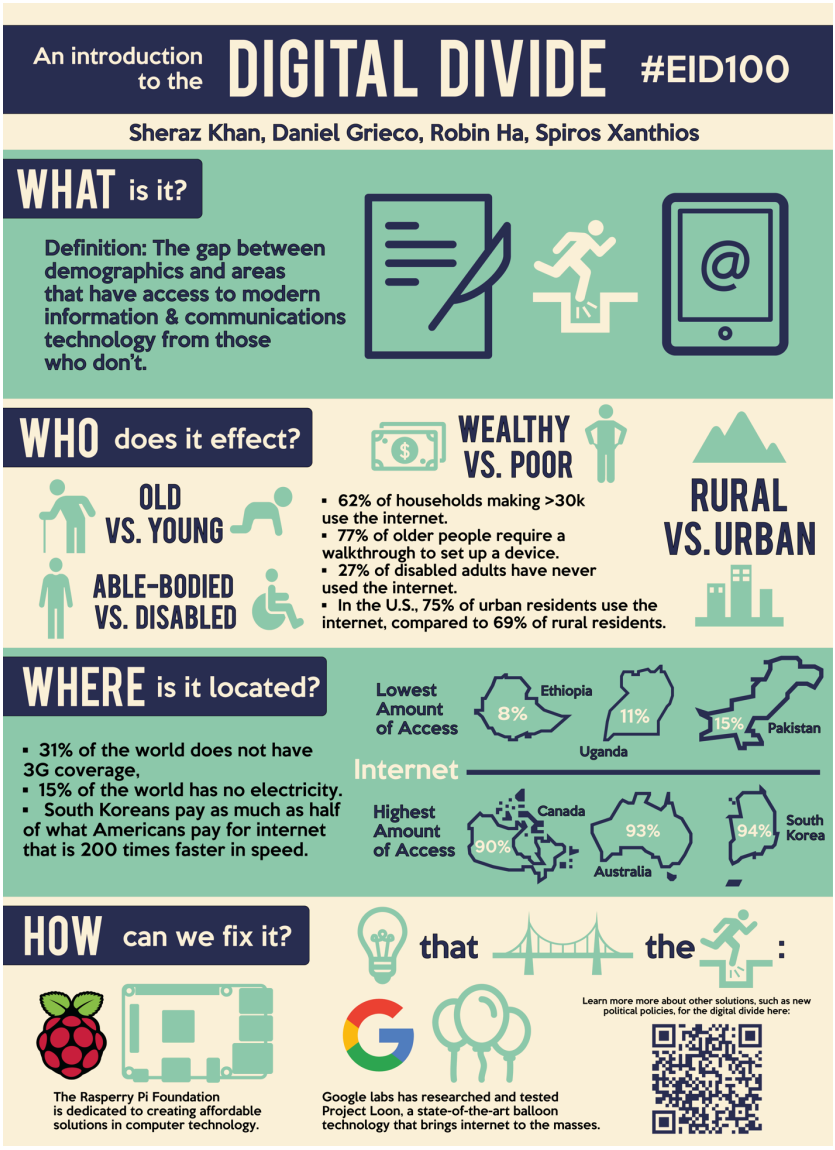
The digital divide encompasses differences in both access (first-level digital divide) and usage (second-level digital divide) of computers and the Internet between (1) industrialized and developing countries (global divide), (2) various socioeconomic groups within single nation-states (social divide), and (3) different kinds of users with regard to their political engagement on the Internet (democratic divide) (Schweitzer, 2015).

The digital divide is characterized by two crucial problems:

1. limited and costly infrastructure to support internet access
2. limited digital literacy in low/middle-income communities to use resources

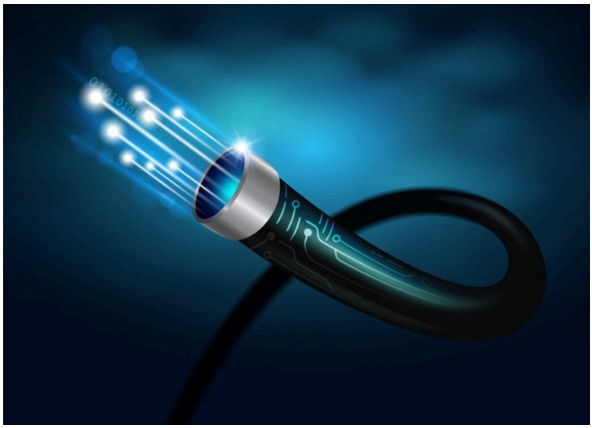
Low/middle-income communities have limited access to digital technologies due to high costs and a general lack of infrastructure, ranging from intermittent supply of electricity to limited availability of Information and Communication Technologies (ICT) facilities (Chipeva et. al, 2018; Ziemba & Becker, 2019).

The digital divide arguably reflects structural factors in advanced societies that give rise to social inequalities in general.



Xanthios, S. (2017). An Introduction to the Digital Divide. Retrieved from https://medium.com/@spirosx/an-introduction-to-the-digital-divide-33dc670f8c16.

HOW DID THE DIGITAL DIVIDE BEGIN?



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The first great step in moving the United States to the digital age was the passing of the High-Performance Computing Act of 1991 (Lindberg & Humphreys, 1995). The High-Performance Computing Act (HPCA) has also been called the Gore Bill. This bill, created and introduced by then-Senator Al Gore, led to the development of the National Information Infrastructure and the funding of the National Research and Education Network (NREN). The purpose of NREN was to provide internet access to all K-12 students. Al Gore was passionate about providing the same research and information tools to students that were used by businesses and the government. Teachers could use this access to share concepts, ideas, and methodologies with other teachers. Students could use it to communicate with other students and experts in various fields.

The High-Performance Computing Act funded a high-speed fiber-optic network that would eventually become the Internet (Cline & Haynes, 2001). Fiber-optic cables work by light bouncing repeatedly off the walls while traveling down the cables. Fiber-optic cables

are now the primary method of transmitting information over long distances because of three main advantages over old-style copper cables (Ko & Qi, 2014):

- **Less attenuation**: (signal loss) Information travels roughly 10 times further before it needs amplifying—which makes fiber networks simpler and cheaper to operate and maintain.
- **No interference**: Unlike with copper cables, there's no *crosstalk* (electromagnetic interference) between optical fibers, so they transmit information more reliably with better signal quality
- **Higher bandwidth**: Fiber-optic cables can carry far more data than copper cables of the same diameter.

The Gore Bill led to the funding of the Mosaic browser, to which many scholars attribute the beginning of the internet boom of the '90s (Wiggins, 2010). The HPCA helped fund the National Center for Supercomputing Applications at the University of Illinois, where the Mosaic browser was developed, as well as many other technological initiatives that laid the foundation of today's modern computer networks and the internet.

Between 1991 and 1996, the number of personal computers in the United States jumped from 300,000 to over ten million (Weiss, 2007). By the mid-1990s the development of internet browsers like Mosaic and Netscape were leading more adventurous users out into a new realm called cyberspace (Weiss, 2007). Email was becoming an increasingly useful application, and officials in the Clinton Administration were beginning to wonder if access to information technology was being fairly distributed. In summer 1995, the new National Telecommunications & Information Administration prepared a report called Falling Through the Net: A Survey of the 'Have Nots' in Rural and Urban America (Rapaport, 2009).

In January 1996, the New York Times took up the call, running an article proclaiming, "A New Gulf in American Education, the Digital Divide." The story compared the availability of computers and internet access at two nearby California Schools. (Students at the less affluent school had to make do with a six-year-old IBM PC, while students at the other, more affluent school were able to go home and work on their own Apple Macintosh computers.) In October 1996, the New York Times reported a story from Georgia titled, "A Nation Ponders Its Growing Digital Divide." This piece reported that "only 9 percent of American classrooms have access to the internet." Soon after, the Reverend Jesse Jackson referred to the Digital Divide as "classic apartheid," while the NAACP's Kweisi Mfume called it "technological segregation." Al Hammond and others at the National Telecommunications and Information Administration took the "Digital Divide" one step further, using the term "electronic redlining" (Rapaport, 2009).

WHO DOES THE DIGITAL DIVIDE EFFECT?

The effect of the digital divide is a myth for many people. For those lucky enough to be on the right side of the divide, this issue may be novel. There has been a multitude of studies aimed at understanding not only what the digital divide is, but whom it affects. Many researchers have defined the evolving digital divide in terms of levels (Dolan, 2016). They describe it as a continuum influenced by overlapping factors, such as digital inequity (Dolan, 2016), as "a New Digital Divide" driven by the intersection of race and gender (Jackson et al., 2008), and even as "Digital Divide 2.0" (Vie, 2008).

Researchers found that quantifying the digital divide was a more difficult task because there are various contributors to the divide. In its early stages, the negative effect of the digital divide had disproportionately excluded men. With men being most of the

online U.S. population, gender was a notable predictor of internet access. In 2017, The International Telecommunications Union reported that the proportion of women using the internet was 12% lower than the proportion of men; this gender gap widens to 32.9% in the least developed countries (Singh, 2017). And even when a woman gets on a phone or is online, she might face additional hostility. A Web Foundation report states that "women around the world report being bombarded by a culture of misogyny online, including aggressive, often sexualized hate speech, direct threats of violence and harassment involving use of private information for defamation (Web Foundation, 2015)."

By 2001, women had surpassed men as most of the online U.S. population. 2009 Census data suggests that potential disparities in gendered connectivity have become nearly nonexistent; 73% of female citizens three years and older compared to 74% of males could access the internet from their home (Gorski, 2001). This was a very encouraging discovery, as one factor that predicted a lack of internet access has seemingly been resolved. While there is more work to be done, the digital divide is beginning to close.

ECONOMIC DISPARITY.

The Pew Internet and American Life Project was a project that started in 2000 and continues. It is a project that has spanned more than a decade to understand the role of the internet in the American lifestyle. The Pew Internet and American Life Project produces reports exploring the impact of the internet on families, communities, work, and home, daily life, education, health care, and civic and political life (Pew, 2018). The project's reports are based on nationwide random phone surveys, online surveys, and qualitative research. This data collection is supplemented with research from government agencies, technology firms, academia, and other expert venues. The Project releases the data from 15-20 research projects each year, varying in size, scope, and objective.

According to the Pew Report, "Digital Differences," only 62% of people in households making less than $30,000 a year used the internet, while in those making $50,000-74,999 that percentage jumped to 90. Smartphones have helped bridge the divide, as they provide internet access to populations previously at a digital disadvantage. Pew reports that, among smartphone owners, "young adults, minorities, those with no college experience, and those with lower household income levels" are more likely to access the internet primarily through their phones. There are still gaps in high-speed internet access. Only 49% of African Americans and 51% of Hispanics have high-speed internet at home, as compared with 66% of Caucasians. Internet speed has important effects on media access, especially when it comes to streaming video, so this gap is significant.

In a Pew survey of teachers, teachers of low-income students tended to report more obstacles to using educational technology effectively than their peers in more affluent schools. Among teachers in the highest income areas, 70% said their school gave them good support for incorporating technology into their teaching. Among teachers in the lowest income areas, that numbers were just 50%. 56% percent of teachers in low-income schools say that their students' inadequate access to technology is a "major challenge" for using technology as a teaching aid. 54% of all teachers said their students had adequate internet access at school, but only 18% said their students had adequate access at home. Interestingly, urban teachers are more likely to say students have poor access to the internet at school, while rural teachers are more likely to report that students have poor access at home (Zickuhr, 2012).

ACCESS TO RESOURCES.

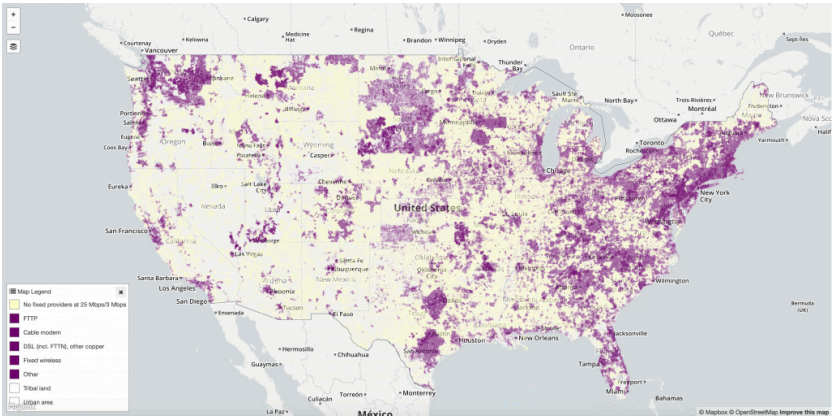
92% of individuals aged 12–17 years go online daily, while 97% of them play computer, web, portal, or console games and 75% of

them own a smartphone (Lenhart, 2015). However, not all students have an equal opportunity to access and use computers at home and in schools (Dolan, 2016). Historically, this access disparity has been called the "digital divide," a definition that focuses on the "haves" and "have-nots" regarding physical access to a computer (Dolan, 2016).

Roughly three-in-ten adults with household incomes below $30,000 a year (29%) don't own a smartphone. More than four-in-ten don't have home broadband services (44%) or a traditional computer (46%). And many lower-income Americans are not tablet owners. By comparison, each of these technologies is nearly ubiquitous among adults in households earning $100,000 or more a year.

The disparity in online access is also apparent in what has been called the "homework gap" – the gap between school-age children who have access to high-speed internet at home and those who don't. In 2015, 35% of lower-income households with school-age children did not have a broadband internet connection at home, according to a Pew Research Center analysis of U.S. Census Bureau data.

In 2017, Federal Communications Commission Chairman Ajit Pai reiterated his commitment to bringing high-speed internet services to lower-income communities (Pai, 2017). To review the Federal Communications Commission's progress toward closing the digital divide, please access the embedded map below.



BRIDGING THE DIVIDE.

Surveys indicate that in the United States, more than 80% of all teachers believe that online learning improves education. While many consider access to technology at home to be critically important to the quality of a student's education, it is alarming that one-third of all students in America, mostly from low-income households, lack that access in their home settings. Having a computer and internet service at home is no longer a luxury – it is a necessity (Leander, Scharber & Lewis, 2017; Grigoryeva, Abukenova & Gill, 2018). There are numerous initiatives that are designed to address the digital divide, below are two examples.

Cox Communications.

Internet providers are working to provide affordable Internet and devices to low-income students and their families through programs such as the Connect2Compete program by Cox Communications. Cox's program is open to families with K-12 children who qualify for free or reduced school lunches through the National School Lunch Program (NSLP), Temporary Assistance

for Needy Families (TANF) or the Supplemental Nutrition Assistance Program (SNAP). Also, Cox has partnered with the U.S. Department of Housing and Urban Development (HUD) to support its ConnectHome initiative. Families with K-12 children who live in Public Housing, as well as K-12 families who receive Tenant-Based Vouchers, Project-Based Vouchers or Section 8 Project-Based Rental Assistance (PBRA), are eligible for Cox's Connect2Compete discounted internet service offer. Since 2012, nearly 200,000 people have been connected to the internet through Cox's Connect2Compete program – most of them for the very first time. This is one of the many programs that has been used to bridge the digital divide. In a 2015 survey of parents enrolled in the program, the grades of more than 50% of the students have improved and nearly 50% say their children are more interested in school.

Close the Gap.

Access to information and communication technology (ICT) is essential in the developing world because it is key to improving a country's educational and economic prospects. However, the cost of new equipment, limited infrastructure and the lack of information technology (IT) knowledge and proficiency mean that many people still have no access to IT. Today, information is seen as one of the major drivers of economic and social development and ICT makes access to information available on an unprecedented scale. The digital divide is not only a divide between people who have access to ICT and people who don't. It's also a divide between people who know about ICT and those who don't, between people who realize the opportunities presented by ICT and those who don't. It consists of an infrastructure gap, a knowledge gap, and a psychological gap.

Close the Gap (http://close-the-gap.org/) is an international non-profit organization that aims to bridge the digital divide by offering high-quality, pre-owned computers donated by European

companies to educational, medical and social projects in developing and emerging countries. Close the Gap collects decommissioned computers from companies and arranges for other organizations to clean the hard disks and then check and configure the hardware according to the requirements of its end-users. The computers are then shipped to the destination country by sea or air transport. Since 2003, Close the Gap has already received more than 250,000 computers from companies all over Europe.

Close the Gap not only provides computers to developing countries, but it also builds partnerships with organizations worldwide to deliver comprehensive software and hardware solutions to its recipients. Today, Close the Gap has supported more than 2,500 projects all over the world. However diverse the projects, they all have one common denominator: a focus on advancing both the individual and the community within a spirit of socio-economical education. By following this principle, Close the Gap is participating in the United Nations Millennium Development Goals.

CONCLUSION.

The digital divide started because of a very progressive effort. The purpose of the National Research and Education Network was to provide internet access to all K-12 students. This effort, while well-founded, generated a divide in access to the internet. This subsequent divide had many contributing factors, including income and gender. Since the identification of the digital divide in 1996, efforts have been made to remedy it. Programs such as Close the Gap and Connect2Compete have been implemented to bridge the digital divide. The authors of this chapter believe that knowledge is power and that as individuals learn more about the prominence of the digital divide, the call to action will increase. Understanding

learning in the digital age means understanding the solutions and problems that arise as the world becomes more digital. Many opportunities to aid in bridging the digital divide exist.

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CHAPTER 10

Ignored Conversations: Higher education funding in the digital age

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INTRODUCTION

Learning in the digital age is often positioned in a positive light. After all, it often means having access to varied digital resources that can be accessed by different computing devices including mobile phones. Learning in the digital age also mean connecting people across time and space to form a broader community of learners. All of these are very positive things that cannot be trivialized. However, in this sea of positivity, we must also own the negativity that still remains. Such negative aspects are often related to matter of access. Meaning that while learning in the digital age can conjure up positive images of learning, not everyone can access

or equally participate in this new real. Often this problem of access is a result of financial constraints. This chapter addresses the issue access to learning in the digital age. Specifically, I look at financial constraints as a barrier to access, by exploring the #FeesMustFall in southern Africa. The goal of the chapter is to remind that there are many issues that while seen as tangential can directly influence one's ability to learning in the digital age.

On October 12, 2015, at the University of Witwatersrand in Johannesburg South Africa, what started as a peaceful protest against government's decision to allow universities to increase fees for the 2016 academic year, and increase government budged to higher education institution (Hodes, 2017), quickly turned into violent riots which spread across the country. The protests quickly spread beyond the borders to neighbouring Namibia.

Namibia, which is a former South African colony, gaining its independence in 1990, has been experiencing economic growth since then; however, there is still a visible economic divide between whites and black Namibians. As a result of previous discriminatory and exclusion systems, many have called for the return of their ancestral land and remedial policies. Although the government has been trying to remedy the results of apartheid through policy, they have only achieved little success due to power imbalances.

Tuition fees have been at the centre of many debates around higher education. In Southern Africa, and particularly South Africa and Namibia where the apartheid history still has visible residue in the socio-economic status of the citizens, tuition fees remain one of the aspects continuing to challenge inequality in the countries (Hopson, 2001; Langa et al., 2017). According to the South Africa History Online (2016), historically black universities such as the University of Fort Hare and Tswane University of Technology have been protesting long before the fees must fall movement erupted, however, they never received any media attention. The fees must fall movement gained media momentum because it started at

Witwatersrand, a historically white institution. Another indication of the inequalities left by apartheid.

This study will focus on the Fees Must Fall movement that erupted in South Africa during October 2015 as a central focus through which the paper will examine the impact of such a movement on Namibia's higher education. The paper will further look at what could be the best funding structure for Namibian higher education institution, considering the history of the country to guard against movements such as fees must fall in the future. As small as the country is, and with only three higher education institutions (Naris & Ukpere, 2010) serving the 2.5 million population, like the rest of the world, there are still challenges in higher education.

The student debt challenge is not unique to Namibia and South Africa alone. In the United States, this challenge is visible through what is known as the student debt crisis, which has become such a topical issue that it has been central to the democratic candidates for the 2020 Presidential elections, with candidates competing on who has the better solution in their campaign.

NAMIBIAN HISTORY

According to South African history website, in 1884, Germany declared Namibia (then, South West Africa) as its colony. The Germans took occupation of the country from 1888, taking over Herero lands. The Herero and Nama people revolted in 1904 and lasted until 1907. Many were killed in this war, which led to the first genocide of the 20th century, with Germany setting up concentration camps where medical experimentation and executions took place. Over 90,000 Hereros and Namas, which is more than half of their population, was wiped out completely. War continued until Germany was eventually defeated.

During the First World War, South Africa took occupation of

Namibia from 1915. In 1920, the League of Nations granted South Africa the mandate to govern Namibia and help it reach its independence; however, South Africa defied the orders. Since then, South Africa took occupation of Namibia as its colony until 1990 when Namibia finally gained its independence through a United Nations resolution. Namibia developed an army which waged war on South Africa in 1966, a war which lasted some 23 years. Many Namibians were dying and going into exile to neighbouring countries, including some leaders such as Andimba Toivo Ya Toivo, who was imprisoned on Robben Island with Nelson Mandela. Namibia was under the same apartheid rule as South Africa. When Namibia gained independence, South Africa was still going through war, and the apartheid government held back Walvis Bay, the harbour town to remain a territory of South Africa. Upon being released from prison and becoming the first President of a free South Africa, Nelson Mandela returned Walvis Bay to Namibia. Walvis Bay is home to the harbour and the fishing sector, which is the third contributing economic sector to the country's GDP.

POLITICAL ENVIRONMENT

At independence, the liberation movement, South West Africa People Organization (SWAPO) won the majority vote and became the ruling party. SWAPO originated from OPO (Owamboland People Organization) which was established in northern Namibia by the Aawambo people, the majority of the Namibian population to date. When it gained the country independence, it vowed to become a national builder which has the interest of the country at heart. The founding President, Dr Sam Nujoma was quoted saying "A people united for a common cause will always emerge victorious" as a binding statement to support the party's "One Namibia, One Nation" campaign. The drive to keep the country together and maintain peace, stability and prosperity has been one of the country's highest-ranking advantages on multiple indices.

Although the constitution only allows five-year presidential terms renewable once, the first President served three terms of 15 years as the country was seen as vulnerable, fresh out war and was not ready for a change of leadership. Thirty years later, Namibia has had multiple peaceful elections, with three Presidents, all belonging to SWAPO. Small opposition parties have been having trouble gaining support as most people are still voting on emotions of war and trusting their liberator SWAPO. In 2019, however, the incumbent President lost 30% of his support from the previous election, gaining only 56% of the votes from 87% in 2015. Most of these votes were lost to an internal SWAPO candidate who ran as an independent and promised people a new wave of economic freedom. Thirty years after the war, the number of young people has grown, including those who have never experienced war, and only need the "prosperity" that SWAPO has been promising. The independent candidate gained traction with the youth, especially on issues such as inflated land prices, corruption, high education costs and overall poverty that prevails within the country. As a result, the President has started listening to the people.

ECONOMIC STATUS

Namibia's population at independence was 1.4 million, which grew to 2.4 million as of 2018 (World Bank). The country covers an area of approximately 312,000 square miles, making it the second least densely populated country in the world after Mongolia (World Atlas). The country's Gross Domestic Products (GDP) grew from $2.79 in 1990 to $14.52 in 2018. With a GDP per capita of $5,931, Namibia is ranked by the World Bank as an upper-middle-income country and ranks much higher than many African countries. The main contributors to the GDP are minerals, fishing, tourism and agriculture (Humavindu and Stage, 2013). The country, however, faces high unequal distribution of income and has one of the highest Gini-coefficient in the world at 59.1%, second only to South

Africa (World Bank) which is unsurprising considering their shared brutal history. About 70% of Namibians depend on subsistence farming for daily livelihood and survival. Although the country has a vast land, most of it is arid, hence 70% of its imports, especially food still comes from South Africa. As a result, and to ensure a smooth exchange of trade between the two countries the Namibian currency (the Namibian Dollar) is directly pegged to the South African Rand and the Rand is a legal tender in Namibia. The country's human development index is ranked at 130/189 countries by the UNDP report.

Although education has often enjoyed the largest share of the country's annual budget, competing priorities of development have been taking part of the pie, and allocation has reduced slightly with 3% in 2019, with higher education receiving only N$3.1 billion (PWC Budget Report, 2019). The reduction places pressure on institutions of higher education in allocating the resources effectively to ensure effective execution of the education mandate placed on institutions. Although the government has done a considerable good job in reducing poverty from 22.6% in 2009 to 14.6% in 2018 (Du Plessis & Keyter, 2019), there are still significant economic challenges facing the country. The country has been experiencing low economic growth for four years since 2016, leading to high unemployment which reached 33.4% in 2018 (Cirrus Capital). Graduates from higher education institutions are struggling to find jobs in a depressed economy; parents are struggling to pay fees as some are laid off, and others cannot find employment. The value of higher education is not far from being questioned.

NAMIBIA HIGHER EDUCATION

Before the establishment of the Academy for Tertiary Education in 1980, higher education was a privilege enjoyed by the few who could afford to study in South Africa, mainly white Namibians

(Hangula et al., 2017). Black Namibians were historically subjected to Bantu Education Act of 1953, a curriculum designed by the apartheid government which was meant to keep black Namibians and South Africans as subhuman and only gain lower-paying jobs (Hopson, 2001).

After independence, two public institutions of higher education were established, the University of Namibia (UNAM) and the Polytechnic of Namibia, now known as the Namibian University of Science and Technology (NUST) to ensure social equity and access. UNAM was established in 1992 while NUST was established two years later in 1994, both by Acts of Parliament, 18 and 38 respectively (Nust Home). In 2018, UNAM had a total enrollment of 28,217 students (UNAM Statistics Office, 2018) while NUST had 11,235 (Annual Report, 2018). UNAM is a larger institution compared to NUST, which was only conferred a university status recently and hence had a more significant number of enrolled students, which also means they receive a larger share of funding from the government.

Sufficiently funding higher education could improve the socio-economic status of the country. If the current public institutions are not well funded, it means they cannot produce competent graduates. A lack of skilled labour in the country can only worsen the socio-economic status, increase poverty and unemployment, and the circle continues (Du Plessis & Keyter, 2019). In developing government policy of financing higher education; therefore, all these factors should be considered. Well-funded institutions will have great resources for students, and students would likely reduce protest activities. In the 2019/20 government budget, UNAM was set to receive N$912 million while NUST would receive N$500 million, a ration somewhat aligned with their student enrollment.

Another body administers most of the student loans, the Namibian Students Financial Assistance Fund (NSFAF), which was established by the government. NSFAF has been marred by

maladministration and board/executive infighting that its effectiveness has been compromised. Many students graduate and continue working without ever paying back the loans, leaving the body short of cash to provide funding for others.

Other means of funding higher education is student loans from commercial banks. The country is home to four major commercial banks, three (First National Bank, Standard Bank and Nedbank) of which are of South African origin and one (Bank Windhoek) was established in Namibia during apartheid. None of the banks is owned by indigenous Namibians, which often proves challenging to those from poor socio-economic backgrounds to access financing, as their products are not tailored for the poor.

Households further contribute to fees for those unable to secure any other form of funding. According to the Bank of Namibia Financial Stability Report of 2020, Namibian households spend over 70% of their disposable income servicing debt facilities, with a high risk of increasing due to the current low economic performance. This number excludes non-banking financial institutions such as micro-lenders, which if included will bring that number to 90%. This shows that households are highly indebted and have little disposable income available. Nuugulu et al. (2019) also highlight the high household debt in the country and further advocates for financial education on households to avoid individuals from falling deeper into debt. Most household, although they probably do not have a choice as they need to pay for their children's education, could also do better with financial literacy in how to handle their limited income better. With the continuous drought, economic recession, lower commodity prices, unemployment at other shocks, households continue to remain under immense pressure for disposable income, leading to some students staying out of enrolling due to lack of funds. The poor continue to be excluded.

FEES MUST FALL NAMIBIA

Given the apartheid history that both South Africa and Namibia suffered, leaving both countries at the top of most unequal nations in the world, education is viewed as one of the economic equalizers. Therefore these protests are efforts to decolonize education.

Following the Fees Must Fall protests in South Africa, Universities in Namibia (UNAM) also started their protests calling for same. The protests were led by the University of Namibia (UNAM) Student Representative Council (SRC), who was said to have been fueled by the Affirmative Repositioning (AR) movement leader and youth activist Job Amupanda, who is also the head of a department at the university. Students started protesting after university management announced that students who owe more than 50% would not be allowed to write exams (Student News Grid, 2016). Both UNAM and NUST had to immediately reverse the decision and allow students to register without paying registration fees, in fear of the protests turning violent like in South Africa (UniversityWorldNews, 2016).

The universities, however, did not agree to write-off the fees, as the high debt would cripple their financial standing, which is already threatened by low government allocation. According to The Namibian newspaper, many students expressed dissatisfaction with the quality of education received at these institutions as compared to the cost. A final-year student, Petrus Shoopala, said:

Unam, as the leading university in Namibia, has done a lot to improve the education levels in Namibia, yes. However, the institution still lacks the adequate standards that you should expect… We pay thousands of dollars every year, yet we still do not deserve the standards we receive from Unam.

Another student, Atu Shimbilinga, is equally opposed to the fees hike and also took a jab at government, especially on corruption:

I do not think that Unam should increase fees. They are saying

they are doing so because the government reduced their subsidy. What type of government is this that does not want to invest in education? Yet we have millions going missing every day, [they are] building new parliaments and paying for ministers' stay in hotels but claim not to have enough money for education. Also, it is not like the increasing tuition fees are going to improve the standard/quality of teaching we receive. I understand that Unam has bills to pay, etc but that does not justify the increase. Instead of putting the burden on the students, they should go to the root of the problem, which is government.

Corruption is a social evil that has been long entrenched in the political culture. Recently, two ministers and five of their friends were arrested for changing the fishing law to suit themselves in allocating fishing quotas to companies that benefit them amounts equivalent to $15 million. Another corruption scandal of development bank executive benefiting up to $12 million. When students see such headlines, while universities claim they cannot lower the unaffordable fees, they become enraged as they believe such funds could be used for better.

Although education has enjoyed the most significant budget allocation, the introduction of the Namibia Students Financial Assistance Fund (NSFAF) for grants, the availability of private companies' scholarships to top performers as well as bank loans, there are still many challenges facing funding education in Namibia. Although there have been many suggested funding structures through policy papers, the government has been reluctant to implement, as education institutions do not agree on one structure (Matengu et al. 2014).

NSFAF is unable to fund everyone, and scholarships are minimal. Bank loans require suretyship, which, with the majority poor black population, many students are unable to provide. Namibians banks also all have their roots in South Africa and are mainly controlled by their South African counterparts (Boer & Sherbourne, 2003), which begs the question of equity when it comes to black Namibia

students seeking student loans, as South African banks have a reputation of treating white and black borrowers differently. This practice leaves students who are unable to be funded by NSFAF without options.

DISCUSSION

The issue of fees must fall comes from lack of funding of the entire higher education sector in the country, coupled with the poor socio-economic status of most families and low culture of philanthropy. Mawere (2017) indicates that both universities and students are victims of this fight, with students being tired of ever-rising fees which they cannot afford due to their backgrounds of apartheid and economic exclusion. Universities, on the other hand, are fighting the battle of a poorly resourced government with competing priorities as it cleans up the legacy of apartheid. African people should, therefore, be cautious not to continue fighting each other on issues that were left by the apartheid legacy.

A senior lecturer at the University of Namibia, Dr Lucy Edwards-Jauch in an opinion piece published by The Namibian newspaper highlighted that the Fees Must Fall movement is a result of neo-liberalism that has changed education from being a right as per the Namibian constitution, to become a privilege. Jauch (2015) further argues that the reduced state funding into a critical sector such as education further amplifies the apartheid regime practices of poverty and inequalities. She argues against privatization of education as most students will not be able to afford the fees and will leave households heavily indebted. The government should seriously consider some of the recommendations that were made during the protests such as wealth tax, capital gains tax and end to corruption to ensure there are enough funds to decolonize education.

Another lecturer at the Namibian University of Science and

Technology (NUST), Dr Hugh Ellis also wrote an opinion piece in The Namibian newspaper where he cautioned government to take the fees must fall movement serious and take lessons from South Africa to avoid further protests. Ellis (2015) warns UNAM and NUST against increasing tuition because most students are already unable to afford the current fees due to their socio-economic backgrounds. He further encourages education institutions to reduce their spending on unnecessary activities such as logos, team-building retreats and instead use such funds to reduce tuition cost to students.

Namibia, as a country, does not have a culture of philanthropy in education, which leads to education institutions relying entirely on government funding for the operation. The country which has only been independent for less than 30 years also has competing priorities in terms of development, leading to a shrinking government contribution to education (Ras & Pretorius, 2007) and more pressure on already squeezed households.

Unfunded education means poor black people will remain at the bottom of the economic pillar, increasing poverty which affects life expectancy. Some students interviewed by Nhemachena & Kangira (2017) indicated that the university also needs to consider some unnecessary charges to students. Some fees charged are for services that are unavailable or dysfunctional. These fees include services such as recreational facilities which are often out of order and not available for use to students. Higher education administrators, therefore, have a role to play in cost allocations to ensure cost reduction to students without reducing university revenue.

As a result of limited funding, tensions have been breaking out at educational institutions, mainly at Board and Ministerial level. The Minister of Higher Education who was appointed in 2016 by the new President has been a subject of controversy in the media since appointment. Leadership at the two government-funded institutions, especially the Namibia University of Science and

Technology (NUST) had to be changed for the first time since its establishment after independence in 1992.

This change brought about clashes between the board and the minister on who the replacement should be, leaving the institution under and Acting Vice-Chancellor for more than a year. The search continues, while the institution experiences financial challenges. UNAM also went through a leadership change, although, since independence, UNAM has always enjoyed government support and funding more than NUST (Naris & Ukpere, 2010). The Vice-Chancellor of UNAM was cited by Lela Mobile (2016) cautioning students not to follow the South Africans in protesting and burning down universities, saying Namibians should be able to reason better. Prof Hangula mentioned that the government has plans to make higher education free (Lela Mobile, 2016) which is not backed by any policy and could be a dangerous statement to make inciting further protests if unmet.

The country has also in the process been experiencing its worst drought in 60 years, and with over 70% of the population depending on agriculture, this affects a lot of livelihoods and household income. The economy has further been in recession for three consecutive years, the first since independence, causing further reduction in government revenue and placing further pressure on allocation to government institutions, education, rail, as well as the national airline, Air Namibia which has been experiencing losses and dependent on government bailouts for over ten years. The country also went through the most contested elections in 2020, where the incumbent President over 30% of his previous support to an independent candidate. Most of the support is lost due to the most significant corruption case involving $150 million that was discovered just before the elections, leading to the resignation of two Ministers, Fisheries and Justice. They, together with their co-accused, were arrested and await sentencing end February. The people are seeing the once beacon of African hope going the direction of many failed states and want change.

Although Namibians are generally peaceful people, the youth are revolting and social media is an essential tool in this fight for economic freedom.

Nhemachena & Kangira (2017) argue that African students access to education challenges cannot be taken lightly and evaluated on basic principles. African students challenges are a result of neo-colonialism dispossession and exploitation. African governments are designing policies for higher education in today's age; therefore, they should place the issue into the context of dispossession and exploitation as it relates to neo-colonialism. Marketisation, where institutions of higher education run like private institutions, should be highly discouraged in Africa (Moganji et al., 2020). Unlike other continents, Africa has been robbed of its resources. It is also the continent where education arrived late and needs to be accelerated to meet the required economic demands.

CONCLUSION

In 2020, both UNAM and NUST students protested the registration fees and both institutions granted a reduction or altogether scrapped the fees, giving students a better chance to register. The loan system process was also revised, resulting in some students who never had access to the loan system before getting granted loans (Nhemachena & Kangira, 2017). This, however, has not become policy yet, and there is still a long way to go. As more and more students take up higher education, the need for funding will accelerate. NSFAF still does not have a substantive CEO, which is affecting its effectiveness in granting student loans and collecting outstanding debt.

The current economic conditions have not improved, and many households continue to drown further in debt. Education still appears to be the only equalizer in the country as the apartheid legacy of inequalities continues. Many students are hungry to

further their education to become the beacon of hope in removing their families out of poverty. Fees continue to rise as government allocation continues to reduce due to competing priorities of development.

Counting all that is going on in the country in terms of protests, that is mainly fueled by low-income families as a result of low economic growth, drought, corruption, leadership challenges, lack of education philanthropy, reduced government revenue and youth involvement in politics seeking accountability, higher education continues to suffer funding deficits. Finding a useful funding model for Namibia's higher education is vital if the government is to avoid further unrests. It has been proven through literature that marketization of higher education cannot work in the Namibian context; hence government and the institutions should be creative, fully understand and appreciate the complexity of the Namibian economic background before making these impactful decisions.

IMPLICATION FOR FUTURE RESEARCH

History dictates that the Namibian higher education issues are deeply rooted in the inequalities brought about by the apartheid system (Hopson, 2001). These inequalities are manifesting themselves through student's inability to access higher education, which further perpetuates the knowledge gap that exists in the black community. When analyzing topics such as fees must fall, researchers must be cautious to not only scratch the surface of what appears to be symptoms of a broader structural history of apartheid. Future research should consider digging deeper into the current funding structures and identify how they can be adjusted to account for the historical disadvantages that were committed and left many outside the higher education system. There is a further lack of data on the current knowledge structure across different

ethnic groups. Such data, if provided, may fuel government efforts in bridging existing inequalities. Although there are several studies conducted on the fees must fall, Heffernan (2018) found that most are either racially exclusive, such as *Fees Must Fall: Student Revolt, Decolonisation, and Governance in South Africa*, a book by Susan Booysen, as well as others such as *As By Fire: The End of the South African University*, a book by Prof. Jonathan Jansen which focuses mainly on university vice-chancellors' views and excludes student voices. Owing to the new nature of the movement, most of the current writing is premature and have not grasped the larger picture to the fees must fall movement (Heffernan, 2018). As time progresses, therefore, and more effects are becoming visible, it will be crucial for researchers to view #FeesMustFall clearer.

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CHAPTER 11

Literacy in the Digital Age: From traditional to Digital to Mobile Digital Literacies

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INTRODUCTION

Literacy is an enigma. While it is easy to agree that everyone should be literate, the conversation around what being literate looks like, and what the term itself is even means depends much on who is leading the conversation and who has a stake in the conversation. The term itself has historically been defined as "possession of the complementary mental technologies of reading and writing, literacy is not only difficult to define in individuals and delimit within societies, but it is also charged with emotional and political meaning" (pg. 12). This perceived simplicity has at times led to many including news reporters and various academic scholars to

refer “to whole societies as “illiterate and uncivilized” as a single referent, and “illiterate” is still a term which carries a negative connotation” (Wagner (1991, pg. 12). Of course, such characterization, although still rampant, they are at least being questioned. At last literacy is being considered much more widely, and being recognised as integral to a culture where it is embedded with functions and meanings.

Literacy can be challenging to define. When narrowly defined crucial elements are left off and when stated too broadly it can be a catch-all term. This chapter does not purport to present a definition of literacy, for such a task has been undertaken and explained by many (Buckingham 1993; Knobel & Healy, 1998; Burniske, 2000 Cope and Kalantzis, 2000; & Semali 2002) who are much better versed in the subject. The goal in this chapter is to look at the understanding of digital literacy and whether or not it is (it broad enough to include the features of) inclusive enough to account for the affordance of mobile devices. Affordance in this context, can mean providing an opportunity that allows an individual to learn or perform a specific action or ability by using a mobile device. Features like portability and individuality are playing a significant role in enhancing mobile digital literacies. These features give any individual the flexibility to learn whenever they want and wherever they want (Sunga et. al, 2015). Inclusiveness is used as a reference to considering a wide range of diverse human factors, i.e., every user is entitled to participation, content creation, and giving a response, which extends beyond reading, writing or any barrier (Kirisci et. al, 2012).

EVOLUTION OF LITERACY

The term literacy itself has undergone numerous evolutions. Figure 1 below illustrates the different components that made up the

United Nations Educational, Scientific and Cultural Organization (UNESCO), definitions from 1958 – 2005.

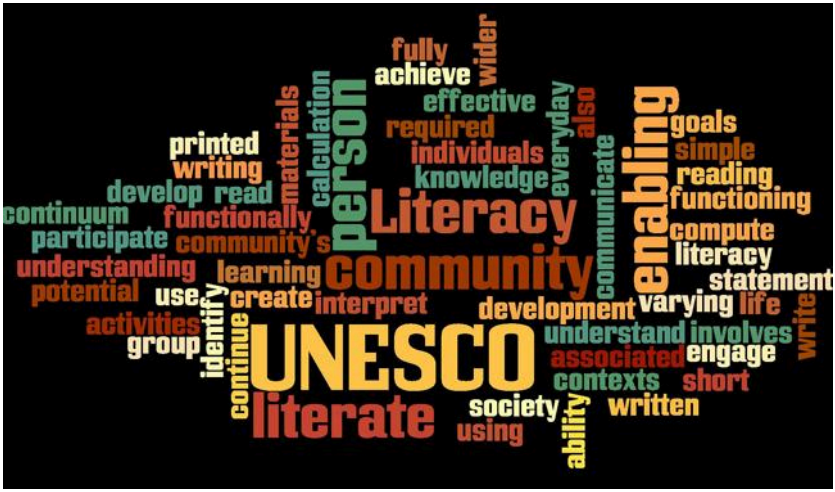

Figure 1: UNESCO literacy keyword

UNESCO works continuously to promote inclusive education practices that eliminate the obstacles limiting the participation and success of all learners, respect the needs of people from different backgrounds and help to eliminate all kinds of discrimination in the learning environment. To illustrate the transformation of literacy Ahmed (2011), collected definitions that depict how UNESCO has changed their understanding over time. As cited by Ahmed (2011), over the decades, UNESCO has provided the following definition at different times between 1958 and 2005:

1. A person is literate who can, with understanding, both read and write a short simple statement on his or her everyday life (UNESCO 1958);
2. A person is functionally literate who can engage in all those activities in which literacy is required for effective functioning of his or her group and community and also for enabling him or her to continue to use reading, writing

and calculation for his or her own and the community's development (UNESCO 1978);

3. Literacy is the ability to identify, understand, interpret, create, communicate and compute using printed and written materials associated with varying contexts. Literacy involves a continuum of learning in enabling individuals to achieve his or her goals, develop his or her knowledge and potential, and participate fully in community and wider society (UNESCO 2005). (pg. 181)

The countries that have membership in UNESCO have also adopted similar stances on defining literacy and as such have had to adjust their definitions accordingly. The table below presents a random sample of countries and their definition of literacy. UNESCO has the information below available on their website from 1975 to 2010. The data was combined in an excel file and each item given a random ID which was used to create the table below. As evident, the definition of literacy has changed over time, and in alignment with the definitions provided by UNESCO.

Table 1: National literacy definitions by year

Country	Year	Literacy Definition
Rwanda	1978	A person is defined as literate if he or she can, with understanding, both read and wr or her everyday life
Argentina	1980	A person is defined as literate if he or she can, with understanding, both read and wr or her everyday life
India	1981	A person is defined as literate if he or she can, with understanding, both read and wr or her everyday life
Lithuania	1989	A person is defined as literate if he or she can, with understanding, both read and wr or her everyday life
Ukraine	2001	A person who has any level of education or can read (for 6 year old people and older)
Liberia	2004	A person is defined as literate if he or she can, with understanding, both read and wr or her everyday life.
South Africa	2007	Household member can read and write in at least one language. If a person can on considered illiterate.
Benin	2009	A person is literate who can, with understanding, both read and write a short simple s
Chile	2009	Able to read and write. The population with 2 or more years of schooling is considere
Uganda	2010	Able to read and write with understanding in any language

Source: UNESCO (http://www.unesco.org/new/fileadmin/MULTIMEDIA/HQ/ED/GMR/pdf/gmr2009/EFA_Literacy_metadata_2009.pdf

The three definitions from UNESCO and the definitions by the countries above, show that literacy has undergone various transformations. They've ranged primarily from the reading and writing paradigm to now the inclusion of electronic media and communication. Smyth (2011) opined that literacy has evolved, it has gone beyond the mastery of the ability to read and write a language but now the comprehension and how to use technology as a medium and not the mastery of technical language.

The move to include technology into the definition of literacy is undoubtedly due to the integration of Information Communication Technologies (ICTs) into everyday life. This integration and usage has brought about the information age, which is characterized by "the widespread proliferation of emerging information and

communication technologies and the capabilities that those technologies provide and will provide humankind to overcome the barriers imposed on communications by time, distance, and location and the limits and constraints inherent in human capacities to process information and make decisions. Advocates of the concept of the Information Age maintain that we have embarked on a journey in which information and communications will become the dominant forces in defining and shaping human actions, interactions, activities, and institutions" (Alberts 7 Papp, 1997, pg. 2).

The information age has brought with it a new literacy referred to as digital literacy. In staying loyal to the trunk from which it sprouts, the term digital literacy has proven to be as elusive in its definition. Most definitions closely resemble that put forth by the United States, Federal Communications Commission (FCC) which argues that ". . . digital literacy generally refers to a variety of skills associated with using ICT (information and communication technologies) to find, evaluate, create and communicate information. It is the sum of the technical skills and cognitive skills people employ to use computers to retrieve information, interpret what they find and judge the quality of that information. It also includes the ability to communicate and collaborate using the Internet—through blogs, self-published documents and presentations and collaborative social networking platforms" (as cited by Clark & Visser, 2011, pg. 38).

This definition although seemingly a catchall and somewhat nebulous, still does not mention or reference the growth of mobile devices and the role that they are playing in society. Mobile devices evolved from what only the learned operated to a user-friendly device; it is not surprising that its price is beginning to decrease in emerging markets, pr items from being expensive luxuries (GMCA, 2017). The definition seems to also ignore the role mobile devices have in globalization which is not to be underestimated especially since such devices have grown beyond simple miniature computers

that enable the transmission of the human voice to being content creation, delivery and consumption systems (Collins, 2005).

The definition of mobile digital literacy has grown over time due to technological advancement. An individual has become more reliant on mobile phones as compared to someone who was using it ten years back. In 1973, when a mobile phone was introduced, it was solely used for communication, mobile literacy meant being able to use the feature limited to the capability of dialing phone numbers to call someone. Today, that definition of mobile literacy can be seen in a new light with the incessant upgrades in the features. It can now be defined as the capability of using and exercising the wide array of features and applications in a personalized manner.

The growth of mobile devices to seemingly ubiquitous levels is affecting communities around the world, altering the ways we communicate, educate, collaborate and engage with one another; altering what we know or think we know about our identity and the very sense we have of space and time (Traxler, 2008). This development which in many ways is akin to Khuns's (1962) paradigm shift theory of science necessitates an evaluation of the current models of literacies and more specifically digital literacies in which mobile devices seem to belong. As Clancy & Lowrie (2002), argued for new approaches and models to understand literacies brought about by the digital age, I am similarly arguing that the digital age has evolved beyond what it was at the turn of the century or even five years ago and as such the understanding of digital literacies need to be updated to address the new mobile digital era.

WHY THE UPDATE

There is an interaction between mobile devices & traditional understanding of literacy. Whereas traditional literacy was more

concerned with reading and writing, mobile devices afford even those without the ability to read or write a chance to participate in the conversation. Some do this by the voice features of the technology others can do so by memorizing various patterns of the device they own, which thereby allow them to conduct business and communicate with others even though they cannot tell a difference between a 6 and a 9, yet they are able to dial it without a problem.

Mobile devices are changing how people are learning. According to Telecomlead, an online B2B publication dedicated to the telecom industry, as of Feb 2019, 89 percent of India's population are active mobile users. However, the literacy rate of India is often cited to be at 71.20%. Even though more than 89 percent of the Indian population has a mobile phone, it does not mean that the percentage of mobile literate in India is limited to 89 percent who own a smartphone. In fact, the number of mobile literacy rates can be higher than the number of people who actually own a device. To elaborate further, let's look at an experiment "Hole-in-the-wall" conducted by Dr. Sugata Mitra in 1999 in India to check the effectiveness of digital literacy. Dr. Mitra's team carved a "hole in the wall to append the slum in Kalkaji, New Delhi to the NIIT premises. A free accessible computer was set up as a learning station for the people living in the slums, especially the children. The children, who now had access to the device, self-taught themselves the skill to operate the computer without prior knowledge or experience. This experiment establishes the point that one does not have to have only the ability to read or write to be considered literate. Nor does one need to go to a formal educational institution to be digitally literate, but to be able to read and write one often needs to go through some sort of formal schooling. Viewed in the context of this paper, similarly, one does not need to only be able to read or write to be considered mobile digital literate. In fact, a person without the ability to read or write

can still use a mobile device to accomplish their tasks. a mobile device in order to qualify for Mobile Digital Literacy.

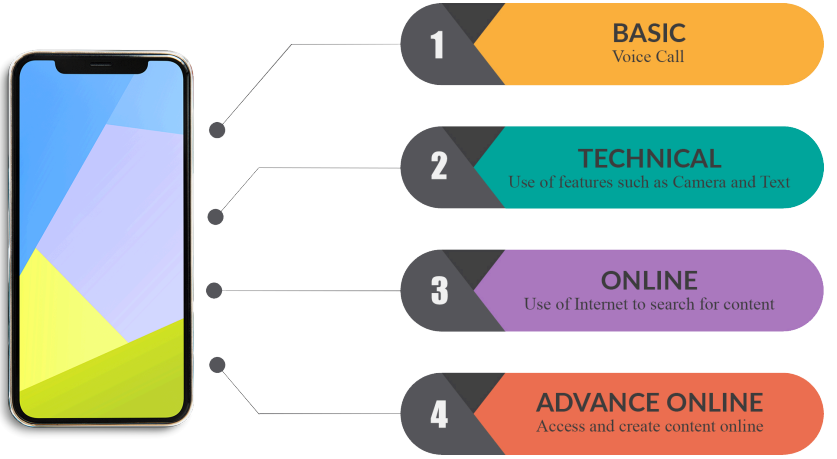

Figure 1. Stages of mobile digital literacies

Mobile Digital Literacies has four stages. These stages help to determine how literate an individual is in terms of using a mobile phone.

Basic: The basic digital mobile literacies mean a person can use their voice to communicate using mobile devices. For example, if a person is able to make a phone call to another they can be considered to have basic digital mobile literacy skills. One does not need to know how to read and write in this context, because since many mobile phones have the ability to store favourite numbers or speed dial, an individual can simply press one number and be able to communicate.

Technical: Mobile devices come with many features such as cameras and the ability to send multimedia messages. The ability to use mobile features such as sending the text, camera, calendar and calculator go beyond one's ability to simply read and write. Such skills classify the user as a technical mobile digital literate.

Online Digital Literacy: Most mobile devices have the ability to connect to the internet. This connectivity aspect is what makes

the devices so appealing to many. However, the presence of connectivity does not necessarily mean someone knows how to use the devices to complete tasks online. Hence, mobile online digital literates are those who can easily browse and search for content using different mobile applications and internet browsers.

Advance Online Literate: Lastly, advanced mobile online literates are capable enough to access, create, navigate and understand online content on a range of digital devices (GSMA, 2015). They not only have the abilities referenced in the previous stages but can also make use of the information for advance decision making.

MOBILE DIGITAL LITERACIES

We propose moving to adopt a new term, Mobile Digital Literacies (MDLS), which is concerned with the role mobile devices play in the world of digital literacy. Mobile Digital Literacies (MDLS) can be defined as an individual's ability to identify, understand, interpret, create and communicate using the features and functionality of a mobile phone. It also serves an opportunity to create an identity and bring more people into the dialogue by allowing those often left out of the conversation a chance to create, recreate and reclaim their identities.

This re-imagining of digital literacy is more important because definitions, teachings and understandings of digital literacy have framed the conversation primarily "as the investigation of ways of dealing with the computer and the Internet" (Pietrass, 2007, pg. 8), which does not include new technologies.

This positioning of digital literacy or new literacies as something that someone else does that students have to examine critically does not go far enough to capture the effects of mobile devices on society and limits our ability, therefore, fall short at providing a framework to critically look at the phenomenon. The issue is no

longer simply about the effect of available information but rather the effect of the information one creates.

Many people, especially those born in the 1990s to today have most of their life digitally recorded. They saw the evolution of many digital platforms firsthand, which includes mobile devices as well. They can easily adapt to the options and in turn, help the new age population to adapt to the options as well. In *Born Digital,* Palfrey & Gasser *(2008)* discuss ways to understand those born in the digital age and also cover the term *Digital Dossier* which they attribute to Daniel J. Solove, a professor of law at the George Washington University Law School (p. 301). The definition of digital dossiers is that, today even before a person is born today, their digital identity starts being constructed through things such as prenatal exams that a mother goes to, and ultrasound images from doctor visits. Even before a child is outside its mother's womb, his or her picture has possibly already been on the Internet if the parents decided to share the picture of the ultrasound. This life cycle continues with doctor visits for various check-ups when a child is born, to tweets, blogs, websites and social networking sites that a person might engage in. Overtime the digital dossier accumulates a lot of material so that it is possible when a person born in 2000 reaches 30yrs of age there is no longer a need to go visit the parents to look at baby pictures, rather all that information would be available and accessible through some form of network, because it has been archived since before the person was born.

An examination of one's digital dossier is not mentioned or alluded to in the current definition of digital literacy or the discussions of new literacies. Consequently, students in schools are taught how to critically examine what others produce and to question the validity of different perspectives presented in digital forms (a case can be made that even this is not being done well), however what is missing is a lesson on self-examination.

In 2011, world governments and leaders were overthrown because of injustices that they committed against their own people,

which are brought to light by the use of mobile devices. The power of mobile devices has extended the nature by which humans are connected, a critical examination of the role the individual plays not only in critically examining what they've read or seen, but rather what they've created and posted is a necessary aspect of a new digital literacy or a creation of a new literacy all together.

Another motivation for the evaluation of the current understanding of digital literacy is the nature by which mobile devices have allowed those traditionally viewed as disenfranchised and marginalized to enter the conversation.

The argument against the investment in ICTs especially in Afrikan schools has often revolved around whether such an investment is worthy of consideration more so than other pressing needs such as addressing, HIV/AIDS, malnutrition, malaria, etc. (Slay & Dalvit, 2008). This 'can't chew and work/walk at the same time' or 'the one thing at a time approach' is no longer the only option. Mobile devices have taken away the absence of communities in the "developing world" from the global conversation while they address "more pressing issues". Mobile devices and the effect they've had have also allowed for different communities to be looked at from their perspectives because of what they contribute to the overall network. This has moved the conversation from the generic global village to recognising that even as technology there are still differences amongst cultures. This realisation has prompted Mills (2010) therefore conclude that "while giving acknowledgment to the significant advances in digital communication technologies, there is not a single global village—rather, there are groups with varied levels of participation in digital practices across local villages around the world" (p. 262).

As argued by Millis (2010), in her survey of the literature, new literacies have often been concerned with the digital divide and leave the impression that technology is leaving those in marginalised and low income communities at a disadvantage. Although there are constraints, those in marginalised communities

are finding a way to enter into the dialogue and are not simply shut out.

Put simply, the conversation should no longer be solely about how the marginalized are left out of the conversation but rather how they are altering the conversation because they are taking part. Whether the various gatekeepers and those in privilege positions are recognising it, the fact remains that those that did not participate before are not only part of the conversation, but they are beginning their own conversations that have nothing to do with what has been designated as the topic du jour. Like water they are seeping through at all different crevices albeit slowly.

CONCLUSION

In this paper, we have argued that the current framing of digital literacy does not go enough to include the changes and affordance that are brought on by mobile devices. We are proposing for an expanded definition of digital literacy which takes into account the different "practices across multiple technologies, media, modes, text formats, and social contexts" (Mills, 2010, p 262).

In agreement with Kress (2010), we believe that the new definition of digital literacies (even if it does not result in the name we propose of Mobile Digital Literacy – MDL), it must have the following three components:

1. the rapid evolution of digital technologies;
2. a new more pervasive emphasis on multimodality in digital communications;
3. a new approach to communication and interaction that is best characterised by an emphasis on design rather than a highly separable distinction between 'writing' and 'reading' (p5).

The choice is to either make room at the table by broadening the definition of digital literacy or to create a new table introducing a new category that includes mobile devices. The traditional way of defining literacy & digital literacies is coming up short – we need to include the different things that mobile devices contribute, and as such we must continue to reconfigure what we traditionally know as literacy.

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CHAPTER 12

The Digital Divide and the lack Financial Literacy among First Generation

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Imagine walking into a bank and seeing no bank tellers around to take deposit money. A few years ago, that is what happened to me. I walked into a private bank to deposit money into my mom's account with no bank tellers' insight. I later realized that the bank had done away with the bank tellers, including the drive-through teller, and instead moved basic financial transactions online. Imagine a young person with no knowledge of online banking and no understanding of financial literacy terminology to figure out online banking on their own. Now throw in that the young person may also have no access to a computer and uses an old cell phone where it only works with public WiFi.

As a former assistant branch manager for a private bank and Certified Financial Education Instructor with the National Financial Educators Council, I know the frustration that people go through

when they don't understand how online banking works and the frustration of basic financial literacy terminology. The future of banking going digital has me more worried about first-generation college students, especially among minority groups, because I fall into the two groups. Studies show how the digital divide and lack of financial literacy education among first-generation college students can be set back compared to non-first generation peers.

As a first-generation college student myself, I had to learn financial literacy on my own through life experiences, and I did not have the latest computer technology growing up until I was in high school. A first-generation college student is defined as an individual whose family comes from a low or medium-income background or high school education without attending college (College Board, 2016). When it comes to financial literacy, studies consistently show that a large number of people lack the financial literacy skills necessary to make critical financial decisions such as taking out a mortgage or understanding the stock market (Mandell & Klein, 2009). First-generation college students are vulnerable to falling into debt, ruining their credit score, or lacking the knowledge of building a budget (Lusardi, Mitchell & Curto 2010). A recent study by the TIAA-CREF Institute stated that 12% of college-educated Hispanics demonstrated advanced financial knowledge, and only 32% displayed basic financial literacy (De Bassa, Lusardi, & Yakoboski, 2015). This kind of experience makes it difficult for Hispanics to be financial stable, comprehend financial literature, and build wealth for the future. I don't see any easy solution to solving financial literacy and the digital divide at the same time.

The solution I have for financial literacy is that every university across the United States requires its students to complete a three-credit financial literacy course. Financial literacy education can play a pivotal role in students' lives. Ineffective money management can result in individuals making poor financial decisions that may prevent them from reaching full financial relief and possibly living paycheck to paycheck. I have yet to figure out how to solve the

digital divide among first-generation college students because of their complexity. For example, the digital divide includes unreliable internet access, older devices that don't work, inadequate cell phone data places, and computers.

To reach a larger audience for financial literacy education the best way are free tools such as YouTube and social media like Instagram. I can teach an individual the basic concepts of online banking and the terminology associated by publishing online courses on YouTube, which I have done. The tools that I use to create financial literacy education in the digital age is Camtasia to record the video and publish on YouTube and Vimeo for easy access to anyone that is interested. Another digital tool I use to teach financial literacy education is Instagram. I published short videos on Instagram TV for individuals to learn about saving money, creating a financial budget, and developing financial goals.

No matter how many courses I publish on YouTube the individual still needs to access the internet. I can't teach a person how to obtain a computer or a smartphone capable of opening up a bank account. How do you solve the digital divide and lack of financial literacy among first-generation college students?

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CHAPTER 13

Escape Rooms: An Alternative to Traditional Forms of Assessment

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Abstract. *Most people think of escape rooms as a fun recreational activity one can do with friends. In the educational world, escape rooms have become a popular way for teachers to utilize game-based learning as an engaging classroom tool. This chapter aims to explain the history of escape rooms, how escape rooms can be educational, and how to design an escape room. Additionally, this chapter aims to provide a brief history and overview of types of assessment and works to explain how escape rooms can be used as assessment tools. Ultimately, the goal of this chapter is to show how escape rooms can provide an experience of playfulness that appeals to students' various learning styles, motivates students, provides teachers with a fun and productive way to assess, and provides a doorway for wonder and curiosity to enter a classroom.*

INTRODUCTION

As time progresses, the world grows more technologically

advanced as innovations in technology are seemingly created each day and new uses for old technology seem to be discovered by the minute. Every day, innovators create new ways to communicate and teach the world. Just as the field of technology never stops inventing and becoming more advanced, so should the field of education never stop advancing. Schools are the bases for teaching the future generation who will be the creators of more advanced technology, which means schools should not be left behind. Too often local and national news sources show that schools across the United States are using outdated technology, textbooks, and techniques. Ringstaff and Kelley (2002) point out that what can be "gleaned from most current research on the implementation of computer-based technology in K-12 education is that technology is a means, not an end; it is a tool for achieving instructional goals, not a goal in itself" (p. 5) Teachers should be reaching modern 21st-century students with modern 21st-century methods with a clear plan of how using technology can enhance their teaching and assessing. As Ringstaff and Kelley (2002) suggest "technology is most powerful when used as a tool for problem-solving, conceptual development, and critical thinking" (p. 9).

ESCAPE ROOMS

Escape Rooms can be defined "as live-action team-based games where players discover clues, solve puzzles, and accomplish tasks in one or more rooms in order to accomplish a specific goal (usually escaping from the room) within a limited amount of time" (Nicholson, 2015 as cited in Vidergor, 2021, p. 2). The use of escape rooms was first documented in 2007 when a single-room escape room game called *Real Escape Game Event* for 5-6 players was open to the public in Kyoto, Japan (Taraldsen et al., 2020). Taraldsen et al. (2020) suggest that the origins of escape rooms can be traced back to an array of genres such as "live-action role-playing, point-

and-click adventure games, puzzle hunt, interactive theatre, and haunted houses" (p. 1) Martens and Crawford (2019) adds adventure game shows and Vidergor (2021) adds shows and movies to the list of origins. As a rapidly growing phenomenon between the years, 2012-2013, recreational escape rooms began to reach a large part of the world outside of Japan (Vidergor, 2021). Eventually, recreational escape rooms made their way to the United States, though it is not entirely evident how that transition happened or when it occurred. However, escape rooms soon were seen as more than just a fun experience for adults as they came to also be seen as an educational tool that teachers could utilize in their classrooms.

EDUCATIONAL ESCAPE ROOMS

"Escape" means to "free oneself from confinement" (Martens & Crawford, 2019, p. 74). As an educational tool, teachers can use escape rooms to help free themselves and their students from the confinement of outdated and boring lessons. Educational escape rooms allow teachers an opportunity to be creative and to truly customize and differentiate content to fit students' needs by using a wide array of tools and resources within their escape rooms. Marki et al. (2021) and Taraldsen et al. (2020) define educational escape rooms as pedagogical activities that are time-constrained and problem-based. Having such interactive activities in the classroom encourages active learning from students through discussions and cooperation.

Escape Rooms as a recreational game can be used in different ways and can use a smorgasbord of tools to present clues and puzzles for those who wish to test their skills and see if they can escape. In an educational setting, escape rooms can take multiple formats. Teachers can use educational escape rooms as in-person activities that include hiding clues, puzzles, and other activities for

students to complete in teams throughout the physical classroom. Additionally, escape rooms might use a blended format where some technology is used to help present clues and to keep track of students' progress through challenges that lead to escaping the escape room. Sometimes escape rooms can be fully digital which means teachers use websites such as Google forms and Google Slides to present a scenario and students work through digital activities to escape the game. Digital escape rooms help to overcome the limitations of traditional classroom teaching by being game-based and learner-centered, allowing students to practice cooperation and problem-solving while using a variety of digital materials within the escape room list of tasks to find clues, solve puzzles, and ultimately escape the game (Huang et al., 2020).

HOW TO CREATE EDUCATIONAL ESCAPE ROOMS

Escape rooms might be fun and challenging to partake in, but the act of creating educational escape rooms can also be fun and challenging. To begin creating an escape room for classroom use teachers should go through a few steps to ensure they cover everything they wish to cover. The first step teachers should take is to identify their audience, the length of time they have to conduct the escape room, and the topic they wish to cover throughout the escape room (Neumann et.al, 2020). Next, teachers should pick several "takeaways" from their topic and then write a question for each takeaway that will challenge students to show what they know (Neumann et.al, 2020). One of the most exciting steps is to write a scenario to get students engaged. A good scenario is an interesting background story that sets up why students are trapped in the escape room and why they need to find a way to escape the game. For example, a scenario story might be that students went on a field trip to a movie theater where they become trapped in the

theater and have to find a way to escape! Neumann et. al (2020) suggests that in the scenario story there should be hidden clues that students can use to solve the first puzzle. Teachers then need to decide what steps students are going to need to take to escape, what puzzles they will need to solve, and how students are going to unlock "keys" that eventually lead to their escape. According to Neumann et. al (2020), teachers should create a digital form where students can submit their answers to progress through the escape room. Teachers should create a digital "room" (see figure 1) that compiles the background story, the location, and a place for students to submit the answers to the puzzles in one place.

All of the steps above can be followed whether a teacher wants to turn their classroom into an escape room, a blended escape room (where parts of the escape room are in the classroom and other parts are done with technology), or a digital escape room. When creating in-person escape rooms, teachers can use old cash boxes, locks, keys, shoe boxes (designed to fit the theme), and other items that teachers can find that might fit the theme of the escape room. For blended or digital escape rooms, teachers have a wealth of resources through the internet. Resources such as Google suite apps such as Google Sites, Google Docs, Google Forms, and Google Drawings are free to use and can all be used together to create an extensive escape room. Many YouTube videos are available to assist teachers throughout the process of creating their rooms. Other online resources include virtual jigsaw puzzles, virtual newspaper builders, custom eye charts, and note generators. Teachers can also use sites such as Canva (see figure 1) or Genially to create templates or to create a virtual room such as a bitmoji classroom where there are clues and links to different places of how students solve all the tasks to eventually escape the room. While it may take time to design an escape room, it can be a fun and challenging endeavor for a teacher that will pay off in an engaging, motivating, and collaborative activity for their students.

Figure 1. Virtual Escape Room designed using Canva. Most of the props on stage would be clickable to take students to another challenge that leads to students escaping the room.

ASSESSMENT

Teaching with modern methods is important, as is assessing students with methods that match the times. For schools in the United States, it is common practice to teach to the test or in other words for teachers to focus on test prep in order to achieve high test scores from their students. Assessing students should not have to follow traditional methods such as pen and paper tests. Teachers should be allowed to move past the influences of more significant economic and political trends to teach students with the most appropriate researched-based methods.

HISTORY AND TYPES OF ASSESSMENT

Since the 19th-century, assessments and the United States educational system as it is known in modern times, were created out of a need to educate all citizens and were inspired by the economic and instructivist ways that are still present today (Box,

2019). In the United States, assessments are an important aspect to determine students' learning abilities in specific contexts. Assessments often take either a formative or summative form though there are plenty of other forms of assessment. Formative assessments are administered during instruction and summative assessments are administered after instruction to ensure students have learned the material (Dixson & Worrell, 2016).

One of the main methods of using formative and summative assessments is through portfolios and traditional pen-and-paper tests such as quizzes and exams (Dixson & Worrell, 2016). Unfortunately, more often than not, technology tools that teachers might use to engage students in learning activities are not used to assess students on the same topics. Current assessment practices do not typically allow for collaboration amongst students as they are expected to be tested individually and they do not encourage unique uses of educational technology.

Continuing with current assessment methods prevents students from engaging in more modern learning techniques and does not push teachers to try new teaching methods. New teaching methods such as game-based learning or escape rooms can help students retain more knowledge. When students retain more knowledge, they are engaged and well-suited to practice collaboration amongst classmates. One of the high-level goals of this chapter and why escape rooms as assessment tools should be considered in schools is echoed by the words of Brown (1992) when she said her high-level goal was to restyle K-12 classrooms from a workplace where students are thought of as vessels to be filled with knowledge from their teachers "into communities of learning and interpretation, where students are given significant opportunity to take charge of their own learning" (p. 141).

EDUCATIONAL ESCAPE ROOMS AS ASSESSMENT TOOLS

Educational escape rooms are generally considered a way to bring game-based learning into the classroom to engage students and cover content in a different way. Typically escape rooms are

not thought of as an assessment tool. An educational escape room makes sense as an assessment tool for a variety of reasons. For one, educational escape rooms already cover many of the same skills that are expected from students when they complete traditional assessments. As mentioned previously in this chapter, one of the recommended steps when creating an escape room is for the teacher to write a question for each takeaway. When the questions are well-developed and thought-provoking they can serve as a way for teachers to assess students in a formative way while the students complete each challenge of the escape room. How successful students are in escaping the room is a way for teachers to assess students in a summative way. While designing educational escape rooms teachers can include different challenges and different ways to solve these puzzles, which creates unique and discreet ways to assess their students. Teachers can use any subject or a combination of subjects as a base for their escape room since many puzzles could potentially require math problems, scientific inquiries, riddles for English, or finding a location for geography.

Additionally, teachers can divide students into groups to work together to figure out how to escape while also deciding how much students can do together and if there are things they want students to do individually. If students work together it can help teachers assess social-emotional skills such as how collaborative and how cooperative students are with each other. In other words, how well students can work together to overcome mutual challenges. Allowing students to work together can also be a way to group assess students and discover which students need more help with certain topics (as they seem to be the ones not as involved in solving challenges) and which students are ready to move on to more challenging tasks (they appear as the leaders).

CONCLUSION

Over time, escape rooms have rapidly expanded from activities that fulfill the population's desire for thrills and challenges to their now being an extensive use of escape rooms in educational settings as highlighted in studies by Huang et al. (2020), Taraldsen et al. (2020), and Makri et al. (2021). In more recent times, escape rooms have gained popularity in many academic disciplines showing that escape rooms can be used for any subject at any grade or educational level. As emphasized by Hill and Brunvand (2018), each grade level has unique advantages and challenges when designing and implementing escape rooms but implementing a gameful approach in every classroom can be an effective way to unlock different learning opportunities while promoting active engagement and collaboration amongst students. Martens and Crawford (2019) point out that escape room activities can help kindle children's wonder and determination, which is crucial to building a foundation for future innovators. Time will only tell how the use of gamified education will change as teachers find new ways to implement escape rooms in their classrooms as a way to engage and assess their students.

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PART II

RESOURCES

CHAPTER 14

Resources

Below are a few readings that can inform our thinking on learning in the digital age. Inclusion below does not mean an endorsement or agreeing with the views of the authors. Rather it is simply to show the different debates and arguments around the topic.

ADDITIONAL READINGS

What do we need/want to know about digital learning?

- Bates, A. W. (2015). Fundamental change in education. In. A.W. Bates *'Teaching in a digital age'*, open.bccampus.ca, [online] Available at: http://opentextbc.ca/teachinginadigitalage/ – Chapter 1
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Do we need new learning theories to explain

- Siemens, G. (2005). Connectivism: A learning theory for the digital age. *International Journal of Instructional Technology & Distance Learning,* 2(1).
- Clarà, M., & Barberà, E. (2013). Learning online: massive open online courses (MOOCs), connectivism, and cultural psychology. *Distance Education, 34*(1), 129-136.
- Tschofen, C. & Mackness, J. (2012). Connectivism and dimensions of individual experience. International Review of Research in Open and Distance Learning, 13(1)

VIDEOS

- The importance of play (5:10) | London Borough of Hounslow
- Play is more than fun (26:42) | Stuart Brown:
- Tales of creativity and play (27:58) | Tim Brown
- The importance of play (18:27) | John Cohn
- Visitors and Residents (7:07) | David White

Links by Chapter

This page lists, by chapter, the status of links the authors originally formatted to be live.

Board games and learning: Why care in the digital age? *Bayeck*

Link	Date Checked	Notes
https://www.twitch.tv/	6.12.24	
https://boardgamegeek.com/	6.12.24	
https://www.gencon.com/	6.12.24	
https://www.bbc.com/news/av/world-africa-35284441	6.12.24	
https://www.theguardian.com/lifeandstyle/2018/may/12/millennials-drive-board-games-revival	6.12.24	
https://www.theatlantic.com/business/archive/2018/01/german-board-games-catan/550826/	6.12.24	
https://www.pcgamer.com/best-board-games/	6.12.24	
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https://www.dailymaverick.co.za/article/2017-08-21-board-games-are-quietly-nerdily-becoming-big-business/	6.12.24	

Effective instruction in blended learning environments *McCabe & Francis*

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https://journals.sagepub.com/doi/10.1177/016264341402900105	6.12.24 KE	
https://www.pearson.com/us/prek-12/why-choose-pearson/thought-leadership/online-blended-learning/digital-learning.html	6.12.24 KE	Goes to home page rather than referenced article, KE removed format
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https://info.flip.com/en-us.html	6.12.24 KE	Flipgrid is now Flip
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https://journals.sagepub.com/doi/10.3102/003465430298487	6.12.24 KE	
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https://www.heritage.org/technology/report/how-online-learning-revolutionizing-k-12-education-and-benefiting-students	6.12.24 KE	
https://www.edutopia.org/blog/blended-learning-engagement-strategies-andrew-miller	6.12.24 KE	
https://www.edutopia.org/blog/blended-learning-engagement-strategies-andrew-miller	6.12.24 KE	Redirect from nearpod link in references
https://potomac.edu/learning/online-learning-vs-traditional-learning/	6.12.24 KE	
https://www.tandfonline.com/doi/full/10.1080/00220671.2017.1302914	6.12.24 KE	

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https://journals.sagepub.com/doi/10.1177/1045159517735530	6.12.24 KE	
https://safeshare.tv/	6.12.24 KE	
https://www.pearson.com/en-us.html	6.12.24 KE	Pearson home page, removed format
https://visible-learning.org/glossary/	6.12.24 KE	

Podcasting as a mode of motivation in online and blended learning *Lewis & Francis*

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Virtual proctoring and academic integrity *Kolski*

Link	Date Checked	Notes
https://www.magnapubs.com/product/subscription/the-teaching-professor/	6.12.24 KE	

Personal learning networks: Defining and building a PLN *Green*

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Digital learners in the workplace *Wise*

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Digital literacies and the skills of the digital age *Green*

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http://www.digitalliteracy.us/		
https://k12.thoughtfullearning.com/FAQ/what-are-literacy-skills%20		

Playful approaches to learning *Essmiller*

Link	Date Checked	Notes
https://www.cultofpedagogy.com/6-ed-tech-tools-to-try-in-2020/		
https://www.canva.com/		

The digital divide *Brown*

Link	Date Checked	Notes
https://medium.com/@spirosx/an-introduction-to-the-digital-divide-33dc670f8c16	6.12.24 KE	

Ignored conversations: Higher education funding in the digital age *Shikongo*

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https://data.worldbank.org/indicator/SI.POV.GINI?locations=NA&most_recent_value_desc=false		
https://hdr.undp.org/data-center/country-insights#/ranks		
https://timelines.ws/countries/NAMIBIA.HTML		Unavailable, format removed KE
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https://www.sahistory.org.za/article/university-witwatersrand-student-protests-2015-timeline		

Literacy in the digital age: From traditional to digital to mobile digital literacies *Asino, Jha & Adewumi*

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http://www.readingonline.org/newliteracies/action/alvermann/index.html	6.12.24 KE	This site can't be reached, format removed KE
https://www.sciencedirect.com/science/article/pii/S0360131515300804	6.12.24 KE	

The digital divide and the lack of financial literacy among first generation *Fulgencio*

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https://www.financialeducatorscouncil.org/jose-fulgencio/	6.12.24 KE	
https://www.youtube.com/channel/UC-jvpxdviaC98jbhMz7B8cA	6.12.24 KE	
https://counselors.collegeboard.org/counseling/prepare/first-generation	6.12.24 KE	

Escape rooms: An alternative to traditional forms of assessment *Willis*

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https://link.springer.com/chapter/10.1007/978-3-030-03092-6_1	6.12.24 KE	Link updated
https://doi.org/10.1080/00405841.2016.1148989	6.12.24 KE	Link updated
https://doi.org/10.1016/j.tsc.2020.100681	6.12.24 KE	
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https://doi.org/10.1080/00094056.2019.1593764	6.12.24 KE	
https://files.eric.ed.gov/fulltext/ED462924.pdf	6.12.24 KE	
https://doi.org/10.1016/j.compedu.2021.104156	6.12.24 KE	

Resources

Link
https://www.researchgate.net/profile/Patricia-Young-2/publication/335753099_Contemplating_the_future_of_educational_technology/links/614b8a2c519a1a381f792bb3/Contemplating-the-future-of-educational-technology.pdf
https://doi.org/10.1108/10748120110424843
https://youtu.be/h_-1O_rBLPU
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https://www.ted.com/talks/tim_brown_on_creativity_and_play?utm_source=tedcomshare&utm_medium=referral&utm_campaign=teds
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