Hashtags and Pins in Education: Digital Native Educators in Digital Habitats.

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Recommended Citation

Cassidy, Kelly Pilgrim, "Hashtags and Pins in Education: Digital Native Educators in Digital Habitats."
(2019). *Doctor of Education in Instructional Technology Dissertations*. 7.
https://digitalcommons.kennesaw.edu/instruceddoc_etd/7

Hashtags and Pins in Education: Digital Native Educators in Digital Habitats

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A Dissertation Presented in Partial Fulfillment of the

Requirements for the Degree of Doctor of Education in the

Bagwell College of Education

Dedication

In a myriad of ways, this dissertation has revolved around the conceptual understanding of human habitats and how they are in flux due to changes we experience in this journey of life. I have been blessed by members of my habitat who have been there from the beginning, such as my parents, Kenneth and Wanda Pilgrim (#ParentingGoals), my sister, McKenzie, (#Sisterhood) and brother, Lee (#TechGeek). They recognized very early that every vacation would include me begging to visit the nearest bookstore and frequently I would drag them into conversations revolving around whatever scientific concept with which I was currently enamored. I am sure they were somewhat relieved when John (#Parabatai) arrived. For the past 27 years, he has been my constant intellectual counterpoint. Together we have created (#JKLRS) and nurtured three amazing boys, Logan (#Engineer, #MIT2026), Reed (#PitcherLife, #FishFearMe, #Bibliophile) and Seth (#ChessMaster, #Songwriter), who delight and surprise us daily with an abundance of joy. I could never express my gratitude to all of them for their patience with my pursuit of endless knowledge to obtain my doctorate.   I am also indebted to all of the research participants in the study who trusted me to enter their Digital Habitats and worked with me to accurately represent their experiences as Digital Native Educators. Finally, throughout my time at KSU, Dr. Julie Moore (#Mentorship), my dissertation chair, has provided countless hours of mentorship, intellectual leadership and emotional support through the entire process. The ITEC team (#ITECEdD), especially Dr. Julie Moore, Dr. Jo Williamson and Dr. Julia Fuller, have been vital to the compilation of my research and the culmination of my doctoral journey.

Abstract

As technology becomes more ubiquitous in society, education cannot ignore the impact it is having on education. This research seeks to understand how Digital Native educators are using Digital Habitats in their professional practice. By gaining a deeper understanding of how educators use Digital Habitats, including their tools, like hashtags and pins, we can begin to develop ways to incorporate these skills into our teacher preparation programs. The knowledge gained from this study can help administrators, technology leaders and coaches to better understand their Digital Native teachers and how they are using these technology tools in their professional practice. This qualitative study was conducted with six public-school Digital Native educator participants. Data was collected in the form of interviews, focus groups, digital archives, observations and documents. The data was coded, categorized and analyzed for thematic revelations. Some of the key findings supported established literature and others extended and refined the current knowledge base.   Overall, the findings of the study demonstrate the participants' interesting and excessive usage of their Digital Habitats personally and professionally. The gregarious nature of the Digital Native educators in this study supported their infusion of Digital Habitat elements into their personal and professional landscapes.

Keywords: digital native, digital habitat, hashtag, twitter, pinterest, instagram, pin, professional learning, professional development

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Chapter 1: Introduction

Statement of the Problem

The technology development stream is equivalent to a rushing rapid. As ideas and innovation flows, the new ways for educators to interact tumble by at an astonishing speed. New technologies crash onto the market daily and are impacting the way we do business, interact socially, and educate students. "In 1982, there were 4.6 billion people in the world, and not a single mobile-phone subscriber" (DeGusta, 2012, p. 2).   As of January 2019, there are over seven and a half billion people in the world and over five billion unique mobile phone users (Kemp, 2019). The figure below shows the penetration of technology as researched and reported in the Digital 2019: Global Internet Use Report (Kemp, 2019).
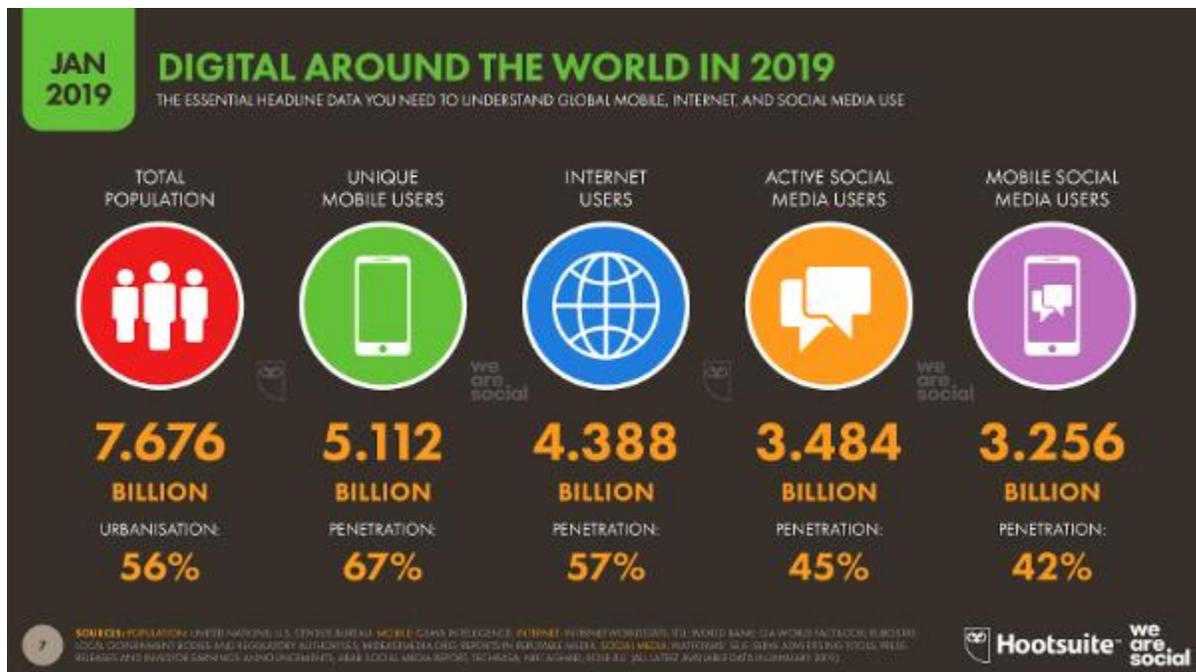
Figure 1. Digital Around the World in 2019.

As technology becomes more ubiquitous in society, education cannot ignore the impact it is having on education and the way that educators interact with peers and obtain ideas and innovations for their classrooms. With a penetration of 67%, there are 11% more individuals using mobile phones today than are living in urbanized society. Almost half, 42% are using social media on their mobile devices (Kemp, 2019).   It is clear that technology is pervasive but what impacts is it having on society?

Research has been done on the attitudes and beliefs of different groups and their relationship to electronics but how quickly does that research become outdated? When Knowles (1973) described the adult learner, most adults had limited access to technology of any kind. When Hew and Hara (2007) and Arakji, Benbunan-Fich and Koufaris (2009) published research on social bookmarking and online knowledge sharing, Pinterest did not even exist. In fact, Pinterest is still in its infancy having only launched in 2010; however, with 900 million active users as of September 2019, it can no longer be ignored as an influential platform for curation (Statista, 2019).   In teacher education, leveraging the power of social media for social learning and professional networking is increasingly recognized as an essential skill for teachers (Johnson, Adams Becker, Estrada & Freeman, 2014).   Less than a year ago, there were about 500,000 education pins on Pinterest per day. Within the last year, 1.3 million pins related to education are now being added on a daily basis (Statista, 2019). In 2015, Pinterest gave teachers their own hub on the site where you can now search by subject and grade level (Pinterest, 2019). It is obvious that Pinterest recognizes that teachers are major users of their platform; however, little educational research exists on this usage.

In addition to the education revolution on Pinterest, Twitter also reports that educators are one of their biggest submarkets of users (Stevens, 2014).   Out of the half a billion tweets that post every day, 4.2 million are related to education, according to Brett Baker, an account executive at Twitter (Krikorian, 2017).   Within 2017, 200 billion tweets were posted and almost 2 billion of those were specific to education. To put this in perspective, in the time it takes to brew a cup of coffee, over 15,000 edu-related tweets have flown across the Twitterverse, almost 50 tweets per second related to education (Krikorian, 2017). With all of the interaction on Twitter and Pinterest, it unveils questions about how educators are using these services.

Educational technology researchers have to make a conscientious effort not to become fixated on a specific platform or service in their research due to the ever-changing nature of the field of study. "Currently, there are 1,252,777 applications available in the [Apple] App Store, and as many as 60 thousand applications are added per month – and this rate of addition is also growing" (Apple, 2019). Due to the deluge of change in technology, updated research is a necessary part of the growth process to keep education and educators informed as these communication systems are updated, systemic changes occur, and new technologies are introduced into the hands of educators and students. "Through systemic change, we can break through traditional barriers - both seen and unseen- to create new relationships and structures to impact teacher learning and development" (Moore, 2006, p.18).   Systemic changes in education related to how educators interact online and seek out professional and instructional growth warrant closer study

Entering the education profession can be an exciting and overwhelming time. Experts caution that "learning to be proficient at something new or finding meaning in a new way of

doing things is difficult and sometimes painful" (Guskey, 2002, p. 388). According to Malcolm

Gladwell's 2008 book *Outliers*, to become an expert in a field of study, evidence supports the

10,000-Hour Rule. He goes on to explain that 10,000 hours of practice is the key to success in

any field, is simply a matter of practicing a specific task that can be accomplished with

20 *hours* of work a week for 10 years. In one of *Outlier's* chapters, Gladwell (2008) focuses on

the American public-school system. He explains that the values of the world we inhabit and the

people we surround ourselves with have a profound effect on who we are. Educators are no

different from any other profession in the sense that it requires a large amount of work to be

good at instruction and it happens faster and more efficiently when you have a teacher tribe to

help you. If the educators in your network are *outliers-* experts in the field of education- it leads

to a higher level of success. If these *outliers* cannot be located locally, is it possible that Digital

Natives are turning to their Digital Habitats for these interactions?

      In order to be more innovative, teachers like to learn from other educators and experts in

the field (Abramovich, Schunn, & Correnti, 2013; Messner, 2012). In the past, these resources

would be provided by mentor teachers, taking graduate level courses, purchasing books written

by pedagogical experts or attending professional development workshops. While many of those

sources are still used by educators, teachers are also using social media to locate instructional

materials, interact and share their experiences (Arakji, Benbunan-Fich, & Koufaris, 2009; Grote

Garcia & Vasinda, 2014; Hew & Hara, 2007; Kennedy, 2017; King, 2017). Not only do Digital

Natives access Digital Habitats to interact with individuals in the profession, Abramovich,

Schunn and Correnti (2013) describe how they are using online resource exchanges for

instructional materials. Locating and integrating new instructional materials into educational

practice is time consuming for teachers. With the ever-growing budget cuts and schools

delaying textbook adoption, are educators are turning to online resources to supplement their

limited or nonexistent provided curriculum?

Educator interactions are occurring in online spaces which facilitate the collaboration of

educators and their peers using a variety of websites and technology applications. The existence

of these Digital Habitats, and the ability to search by hashtag, means that informal professional

development is easily accessible; therefore, becomes embedded in the teacher's daily routine

(Kimmons, Carpenter, Veletsianos, & Krutka, 2018). Younger teachers are coming into their

professions as educators with a plethora of technology experiences. They have spent their

childhoods immersed in a society in which technology has become an integral part of everyday

life. Since these Digital Natives have relied on their technology in so many aspects of the

personal lives, it is not surprising that they would also integrate their devices and online

interactions into their professional practices. This integration can lead to transformation of

practice as educators socially construct their classrooms and curriculums (Beach, 2012;

Bickmore, 2012; Lock, 2006).

Unfortunately, limited research has been done on the usage of these social interactions,

hashtags and pins, and how Digital Natives are using these in their professional practice (Grote-

Garcia & Vasinda, 2014; Ooi, Hew & Lee, 2018; Pearce, 2013; Tang & Hew, 2017). Even less

has been done to address Digital Habitats (Druckenmiller & Mittleman, 2015). Of the research

done on Digital Habitats, the focus has been on Digital Natives as students and consumers of

information; however, it needs to be updated now that they are delivering the instruction as well.

This research seeks to understand how Digital Native educators are using Digital Habitats

in their professional practice. By gaining a deeper understanding of how educators use Digital

Habitats, like Twitter and Pinterest, and how they are utilizing tools, like hashtags and pins, we

can begin to develop ways to incorporate these skills into our teacher preparation programs to

train administrators, technology leaders and coaches to help educators to use these services in the

most effective way possible. "It is not realistic to expect pre-service teachers. . . to be able to

integrate technology effectively in their professional career if they have little to no experience. . .

in their preparation experience" (Polly & Moore, 2008). Teacher leaders and even novice

teachers may also benefit from the knowledge of how technology is being used to affect their

professional practice. In order to better serve teachers and teacher leaders, as they are

developing and fostering pedagogical skills, and interacting in a Digital Habitat, we need more

information on how they are selecting and utilizing these technology resources so we can better

guide the process and foster professional and deliberate usage.

Research Questions

Building upon Kearsley and Shneiderman (1998), Thota (2015), and Piki (2017), this

research will focus on a "single, overarching central question and several sub-questions"

(Creswell, 2012, p. 138). The overarching research question: ***How are Digital Native educators***

using Digital Habitats in their professional practice?

A qualitative research methodology will be used to gain insight into the use of Digital

Habitats by Digital Natives in their profession as educators. Creswell (2014) explains that

qualitative approaches are useful when little research exists on the topic and the research seeks to

explore a process. The central question is complex. In order to investigate in depth, the

following topics and sub-questions will help guide the process.

Research Sub-Question 1: How do Digital Native educators describe their Digital Habitats

and the interactions that occur there?

Research Sub-Question 2: How are Digital Native educators interacting with hashtags and

pins in their Digital Habitats for professional learning?

Research Sub-Question 3: How are Digital Native educators incorporating information from

their Digital Habitats into their instructional practices?

Goals of the Study

Study Impacts

My research topic is centered on individuals who continually pursue knowledge and

intellectual interaction independent of a college class or any kind of requirement. The

overarching goal of the study is to uncover the interactions of Digital Native educators in Digital

Habitats as they are using hashtags and pins. How are their experiences and interactions in their

Digital Habitats fostering professional growth and does the information that they curate and

gather impact their instructional practices?   The information uncovered during the study will

have personal, professional and intellectual impacts.

Personally. Albert Einstein once said, "I have no special talent. I am just passionately

curious. " In a way this sums up my ongoing pursuit of knowledge." I am always striving to stay

abreast of all the new technologies and how they are impacting education. I believe that it helps

me continue to grow as an individual as I add knowledge and skills to my toolbox. I do not like

feeling like a Digital Immigrant and strive to be ever-reaching into the Digital Native world.

I am part of the fencepost generation; individuals in their late 30's and early 40's who did

not grow up on computers or with cell phones but have had them thrust into their lives and have

been forced to form interactions with technology. We are either *technology masters* or

technology shy. We can fall on either side of the fence. Depending upon our individual

experiences and developed skill sets, we may identify with Digital Natives or Digital Immigrants

or have some characteristics of each. We completed our bachelor degrees without Google or

Wikipedia and found soulmates without Facebook, Tinder or eHarmony. I remember a time

when I was unable to Google a lesson for my class or look on Pinterest for a bulletin board idea.

I had to use my own creativity, ask a mentor or veteran teacher what pedagogy they favored, or

check out books from the library to get ideas. I am interested in how this global communication

is changing interactions within schools. Do Digital Native educators rely on mentors within a

school anymore or are they looking online in their Digital Habitats for role models? How does

educational leadership within the school help novice teachers select educational materials and

find Digital Habitats? Do new teachers even think to ask veteran teachers anymore or are they

more apt to go onto Pinterest and search for ideas and materials there? How is the access to

information using social media sites potentially changing the profession? In order to remain

relevant, I strive for this knowledge to better equip me to stay ahead of the changes in my

profession.

Professionally. I am enamored with self-directed personalized learning. I believe that

what drives these individuals is passionate curiosity. When individuals search out hashtags and

follow their educational role models on Twitter, I am hooked. When I see educational boards on

Pinterest and know that there are teachers across this nation on their computers right now

searching for instructional materials, I am fascinated. I am invested in the ways that educators

are growing and changing and how this is influencing the profession holistically. Digital Natives

interacting in Digital Habitats is fascinating and informative to me as a technology leader and to

my work in educational leadership. I find myself mentoring new educators who are Digital

Natives in my role as an Instructional Technology Specialist and STEM coordinator. I want to

be able to converse with them about their interactions in their Digital Habitats and guide them in

the best possible usage.

     Intellectually. I believe that this area of research is a vast ocean to be explored and I

would like to make my contribution as a Digital Habitat explorer and help discover the ways

Digital Natives are using these spaces to help inform the future of education.

Local Context

The location chosen for the case study is one of nine cities situated in the Southeastern

United States. The system is giving the researcher access to participants and data which will

inform the study. The research location is not widely diverse; however, the population has

representative members from many races and cultures. Eighty–three percent of the population is

white, approximately 15 percent is African American, and the rest are Asian or Hispanic (United

States Census Bureau, 2019). According to US Census Bureau (2019), a total of 76% of

resident's report having a high school diploma or higher education and 85% of residents have not

moved within the last calendar year. The County School System (CSS) serves approximately

13,230 students in ten elementary schools, four middle schools, and four high schools (personal

communication, September 2019). CSS employs 39 building-level administrators and 870

certified teachers (personal communication, September 2019). Initial surveys of the teaching

population indicated that 57 individuals responded who self-identified as Digital Natives

(Appendix A; Cassidy Survey Results, May 2019).

Conceptual Framework
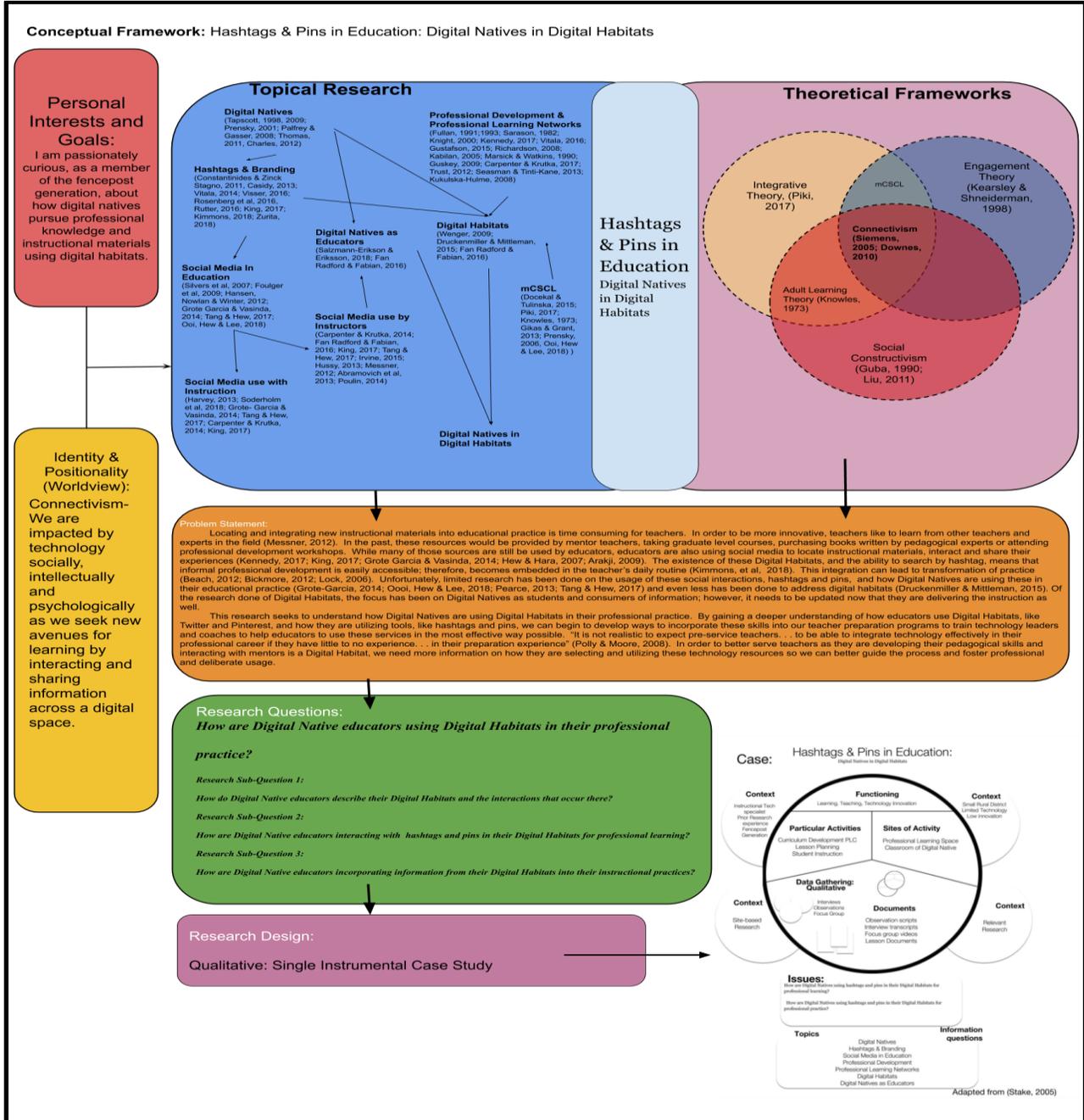
Figure 2. Conecptual Framework

The conceptual framework figure above shows the graphical representation of the conceptual framework for the study. For a more detailed view of the image above, you can access the graphic at https://goo.gl/bc2Pvz

Framework of the Study- Worldview

According to Bockler, Herrmann, Trautwein, Holmes, and Singer (2017), "understanding other people may be inherently linked to understanding oneself" (p. 205). It is important to spend time reflectively considering worldview and perceptions before beginning a research study to collect perceptions and beliefs of others. In order to know and understand the data collected, an understanding of my own worldview is crucial. I present this worldview and framework of the study to be transparent to the reader and also to reveal the origination of my perspective. Bockler et al. (2017) work on the *Theory of the Mind* "clearly suggests that the degree of familiarization with one's own internal dynamics and affective and cognitive patterns is linked to improvements in understanding the mental states of other people" (p. 206). Bockler et al. (2017) also postulated that framing the study within a worldview also aids in,

> the systematic and scholarly application of the principles of a science of behavior to the problems of people within their social contexts, and when we use the term educational research, we likewise have in mind the application of these same principles to the problems of teaching and learning within education and to the clarification of issues having direct or indirect bearing on these concepts." (p. 1)

For this study, I will be adopting a *Connectivism* approach which is influenced by *Social Constructivism*, *Adult Learning Theory*, *Engagement Theory* and *Integrative Theory*.

Social Constructivism. Social constructivism seeks to understand the world and the reality of the inner-workings of society. In today's age of technology, it seems appropriate that the daily presence of electronics and the constant connectedness of people has become a point of interest in constructivism (Liu, et al., 2011). Understanding is sought as to how these devices impact humans on a social, intellectual and psychological level. Guba (1990) also reminds constructivists of the overarching understanding that "no unequivocal explanation is ever possible. There can be many constructions, and thus no foundational way to choose among them" (p. 25). The best social constructivists can hope to accomplish is to "reconstruct the world at only the point at which it exists in the mind of the constructors. It is the mind that is to be transformed [and our knowledge and understanding that changes] and not the real world" (Guba, 1990, p. 27). Stake (2010) discusses the importance of multiple realities. A constructivist view does not uncover the one truth to an event, it exposes that there is no true meaning. There is only the event as experienced or interpreted by the people. The collection of these ideas, interpretations and experiences leads to more "depth in our reports than when we portray a single reality" (Stake, 2010, p. 66). In truth there is not a single reality to the use of Digital Habitats by Digital Natives in education. As educators are using Digital Habitats, are they social constructing the Habitats themselves? In their interactions, are they making decisions and interpretations to arrive at a collaborative reality?

Adult Learning Theory.   Adult learning is often portrayed as a social construct. According to Vitala (2016), the term social often appears when discussing adult learning and high-quality professional learning. The foundations of adult learning set forth by Knowles (1973) states that adult learners are self-directed, social, and prefer an informal learning

environment. In many ways, virtual spaces are not unlike a playscape for children. Albert

Einstein said, "play is the highest form of research". In a playscape, children will develop their

own rules and construct a reality around how the space best functions for the members of the

play group. What might be a castle one day, serves as a treehouse or a fort for another day.

Could Twitter or Pinterest be serving as the castle or fort for adults?

      Adult learning is based on the following precepts: adults need to know why they need to

learn something; adults maintain the concept of responsibility for their own decision; adults

come to learning with a greater volume of prior knowledge and experience than children; adults

have a readiness to learn what they know will help them cope more effectively; adults are life-

centered; and adults are more responsive to internal motivators than external motivators.

(Knowles, Holton, & Swanson, 1998, p. 72). The four phases of the adult learning process are:

need, create, implement and evaluate. (Knowles, Holton, & Swanson, 1998, p. 125). Digital

Habitats, like Twitter and Pinterest, fit all of these adult learning assumptions. Twitter addresses

the need that the learner has to obtain knowledge, the user tweets and creates in the platform as

they interact, then they implement their learning from the platform interactions and at last,

evaluate their experiences. The process is very similar with Pinterest. The learner may initially

visit Pinterest in search of something specific to fill a need for knowledge. Boards are available

which allow them to pull, curate and create a space that is filled with information related to their

initial need. Each time a user clicks on a pin on Pinterest, the platform will also show additional

pins that are related to the current pin. Effectively, this sends you down a rabbit hole engaging

you with more information related to your topic of interest. The user can then decide to store or

implement items from their board and then evaluate the usefulness of the items discovered.

Engagement Theory. Kearsley and Shneiderman (1998) describe engagement theory as students meaningfully engaged in learning activities through interaction with others and worthwhile tasks. While engagement theory has been used with student interaction, it is also relevant here since the purpose of the study revolves around educators as adult learners in their professional learning process. There are three components of engagement theory: collaboration, project orientation, and authentic focus (Kearsley & Shneiderman, 1998). Educators are involved all of these components as they interact professionally online in their Digital Habitats.

Digital Habitats, including elements like Twitter, Facebook, Snapchat and Pinterest, are collaboratively constructed. Users are the contributors to the content and without collaboration, the platform would collapse. The orientation of the project is focused with hashtags on Twitter and pins on Pinterest. These elements bring focus to the platforms as the users engage. The platforms help the user maintain an authentic focus with the ability to follow users or boards which have the same project orientation. When you click on a hashtag on Twitter or a pin on Pinterest, you are given more information related to that topic which helps to support authentic focus.

There is also overlap with engagement theory and adult learning theory. Knowles (1973) says adults learn socially and Kearsley and Shneiderman (1998) discuss how learning and engagement are collaborative constructs; thus, the two work to support and complement one another.

Integrative Theory. Integrative theory, as described by Piki (2017), guides the exploration, understanding, and amelioration of learner engagement and informs the pedagogical design of successful mobile computer- supported collaborative learning (mCSCL) environments.

Building upon work by Rogers (1967), Integrative theory proposes that "true learning in the form

of the self-actualized person [is] impossible without an integration of cognition and emotion"

(Palmer, 2001, p. 51). Kearsley and Shneiderman's (1998) engagement theory has been utilized

by other researchers, such as Piki (2017) as a foundational framework. Integrative theory takes

the engagement theory and updates it for mobile computer learning environments. It also

incorporates many of the features of adult learning such as the lack of formality and the

importance of self-direction. Piki (2017) explains that "learners in educational, professional and

social contexts are no longer mere receivers of information; collaborative educational technology

allows them to act, react, and interact yielding new forms of knowledge which is in turn shared

and made available to others" (p. 108). They are integrated into the system itself and become

engaged as adult learners and as constructors of information.

Connectivism. Connectivism, as introduced by Siemens (2004) "integrates principles

from chaos, network, and complexity and self-organization theories, underpinned by the

epistemology of connective knowledge, pedagogy, and theories of innovations in technology"

(as cited in Thota, 2015, p.85).

Siemens (2005) details learning in a digital era as an act of forming networks. In 2017,

Siemens went further to say that connectivism is "enabling adaptability of learning agents" (p.

108). Connectivism is rooted in the understanding that:

1. knowledge is emergent, distributed across information networks, and resides in

   multiple individuals;

2. the acquisition of knowledge rests in the interactions and the diversity of views and

   opinions within networked communities of learning and personal networks;

3. technology frees learners from the cognitive operations of information storage and

retrieval, keeps learners current in a rapidly evolving information ecology, and enables

learners to see the interconnections in different fields of knowledge;

4. socialization is evidence of connectedness and the learner is empowered to learn and

reflect through conversation and interaction and through the creation and sharing of

meaningful digital artifacts, such as blogs, Twitter posts, Pins on Pinterest and

multimedia Webcasts; and

5. informal and lifelong learning are significant parts of the learning experience that

includes work-related tasks. (Downes, 2006, 2008; Siemens, 2006)

Thota (2015) explains that, "connectivism is a theoretical lens to encourage self-directed

and collaborative learning" (p. 93). Four types of activities drive learning in a connectivist

environment: (1) aggregation of resources; (2) relation of new knowledge to old; (3) creation of

artifacts to show learning; and (4) sharing of insights with other learners (Kop, 2011).   The

connectivist learner exhibits nurturing behavior to maintain connections to "facilitate continual

learning and developing the ability to synthesize and recognize connections among fields, ideas,

and concepts" (Thota, 2015, p. 86).   Connectivist learning environments are seen as "open to all

perspectives; encouraging diversity of viewpoints; allowing individual autonomy to learners to

contribute according to their own knowledge, values, and decisions; and furthering interactive

knowledge production" (Thota, 2015, p. 85). Siemens (2017) posits that "learning must be

aligned with the nature of flow of knowledge in our society today" (p. 109). Are adults using

Digital Habitats as their playscapes for learning?

Constructivist learning theory has also influenced the use of technologies for learning (Jonassen, 2000; Kop, 2011; Thota, 2015).   Constructivist-based technologies serve as cognitive learning mind tools to scaffold, engage, and facilitate knowledge construction and reflective thinking (Jonassen, 2000; Thota, 2015).

Siemens (2017) states that "context, needs of learners, institution, and teachers all contribute to the formation of valuable learning. No single avenue suffices. Initial conditions and adaptive interactions—not solutions crafted in advance—direct ongoing and subsequent activities of both educators and learners" (p.108).   Connectivism is useful for explaining the social experiences of Digital Natives in Digital Habitats.   It is an updated theory which accounts for tech-enabled interactions. Connectivism is influenced by the foundational theories of social constructivism, adult learning theory, engagement theory and integrative theory. All of these theories work holistically to form the conceptual framework for the study.

Review of Relevant Terms

Digital Habitat- The virtual spaces in which an individual interacts with information and with others (Wenger, White, & Smith, 2009).

Digital Immigrant- An individual born before 1980 who did not grow up immersed in technology (Prensky, 2001a, 2001b, 2006).

Digital Native- An individual born in 1980 or later who has been immersed in technology as they have grown and developed socially and intellectually (Tapscott, 1998; Prensky, 2001a, 2001b, 2006).

Digital Traveling- The conceptual understanding that virtual reality and the interconnectedness of social media and networking is allowing individuals to adopt a worldlier and culturally comprehensive life experience which includes places and interactions that prior to technology would have been impossible (Soderholm, et al., 2018).

Fencepost Generation- Individuals who do not fit the class Digital Native or Digital Immigrant definitions due to some variable. These individuals are usually born between 1978 and 1982.

Hashtag- A word or phrase preceded by a hash sign (#), used on social media websites and applications (Boyd, 2007).

mCSCL- *mobile* Computer Supported Collaborative Learning - Learning collaboratively with mobile devices.

Net Genners- Digital Natives who have grown up with social media. In their lifetime, they have always had access to information at their fingertips and have been able to connect with others locally and around the globe (Grote-Garcia & Vasinda, 2014).

Pin- An image saved on Pinterest which links to a website or more information about the image.

Professional Development - a discrete activity or set of activities, usually in the form or workshops, classes, or conferences, that supports one's professional learning.

Professional Learning- an individual's expansion of knowledge and understanding within a specific field of study.

Professional Learning Network- a group of individuals whose interactions benefit each other in their professional practice. A personal learning network (PLN) has been defined as a "system of interpersonal connections and resources" that can be used for informal learning, collaboration, and exchanging knowledge and ideas (Trust, 2012, p. 133)

Social Media- websites and applications that enable users to create and share content

Social Network- using a digital platform for connections and interactions with individuals who have similar interests either professionally or personally.

Summary

The overarching goal of the study is to uncover the interactions of Digital Native educators in Digital Habitats as they are using these spaces for their professional practice. The information uncovered during the study will have personal, professional and intellectual impacts. For this study, I adopted a Connectivism approach which is influenced by Social Constructivism, Adult Learning Theory, Engagement Theory and Integrative Theory. The conceptual framework provided direction for the literature search to locate and analyze foundational work in the topics as well as more recent contributions. Using the conceptual framework, the literature review is presented in the next chapter to illuminate the topic and to uncover gaps in the available studies and situate the current study.

Chapter 2: Literature Review

Introduction

My overarching goal for this literature review is that it "establishes the nature of the ground on which the current dissertation is built – rather like the foundations of a building" (Oliver, 2012, p. 134) and that it creates "a complete, accurate representation of the knowledge and research-based theory available" (Dawidowicz, 2010, p. 5). The literature revealed differences in context, gaps in empirical studies and conflicting and contentious results within certain areas. In some topic areas adjacent to this study there is a plethora of potential literature available; whereas, other topics have very little information. To be transparent about the inclusion or exclusion in the literature review, the following guidelines were adopted from Oliver (2012) and Dawidowicz (2010).

Literature Inclusion Guidelines

Guideline 1: All literature on a subject was not selected. Oliver (2012) advises that the literature review should not be an "amorphous mass of assorted literature and references, but from the first paragraph, the reader should be able to easily follow the plan which you have developed" (p. 60)

Guideline 2: The publication source was scrutinized. Oliver (2012) explains that if a "publisher tends to specialize in a certain type of academic output, whether textbooks, research monographs, or scholarly journals, they have staff who are experts in these fields, and also forms of thorough editorial control" (p. 62). For example, Sage Publications has numerous books on Qualitative research design. When compiling resources for a qualitative study, Sage is the

publisher for foundational texts on the subject by Creswell (2012; 2014), Maxwell (1996), Stake (1995), Yin (2002) and Lichtman (2013). Several academic journals occur frequently during the investigation of the topics for the study as well; such as, *The Journal of Interactive Online Learning* and *Computers and Education*.

      Guideline 3: Peer-reviewed sources were preferred. Oliver (2012) and Dawidowicz (2010) both suggest leaning heavily on peer-reviewed sources with the knowledge that "if we know that it has been peer-reviewed, we do at least know that quality checks will have been applied" (p. 63). Furthermore, while peer-reviewed studies may not be the perfect "piece of research... we know that at least it has been subject to a reasonable degree of checking by informed peers" (Oliver, 2012, p. 63).

      Guideline 4: The use of the work as a citation in other studies on the subject was considered. While newer studies will probably have few instances of citation, foundational works can be evaluated and selected by how valuable they have been to previous doctoral students and research faculty. When analyzing two books or papers with similar focus, inevitably, one will have been selected and cited more than another. This helps to laser the focus of the literature review and is especially beneficial for the foundational texts that are included. For example, when investigating the *Adult Learning Theory*, it was quickly evident that Knowles (1973) was a seminal work. According to Google Scholar, Knowles' 1973 book, *The Adult Learner: A Neglected Species* has been cited over 10,000 times; whereas, Robert Burns' work from 2002, *The Adult Learner at Work* has only been cited 365 times. This information helps focus the literature review. Understanding that it would be impossible to include all of the books and articles written on the *Adult Learning Theory*, selection for inclusion can be aided by the

number of times a work has been cited by other researchers. It was unrealistic to search every

single source for the literature review and look at the citation frequency. Instead, when

evaluating a source for inclusion, if there were several that were similar, the number of citations

was just a tool employed to determine the impact of the work and used to make decisions about

inclusion.

It is also important to note that while every effort has been made to be self-reflective and

to analyze precisely which literature to include, the review is largely my effort to "be objective,

fair and balanced, ... implicitly or explicitly approaching the decision from [my] own particular

academic perspective or ideology"(Oliver, 2012, p. 72). As an imperfect and novice researcher,

this literature review will be flawed and to some, incomplete, based on the reader's own topical

interests, academic perspectives and ideology. To me, it is intellectually rewarding to discuss the

choices of inclusion or exclusion with more experienced experts in this field so I may continue to

grow as a researcher and instructional technology leader.

Theoretical Framework

I have chosen to include foundational works in the topics, research that is integral to a

specific part of the study and work that is recent and illustrates the current research track. I have

made an effort to exclude some of the relevant studies (to include all would be almost impossible

and redundant). To visualize the flow of the literature review I completed, the following

diagram is provided. It is a subset of the conceptual framework of the study that is ever-evolving

and can be viewed in its entirety at https://goo.gl/bc2Pvz . This graphic organizer attempts to

show relationships between empirical research topics while also showing the flow from one topic to another.
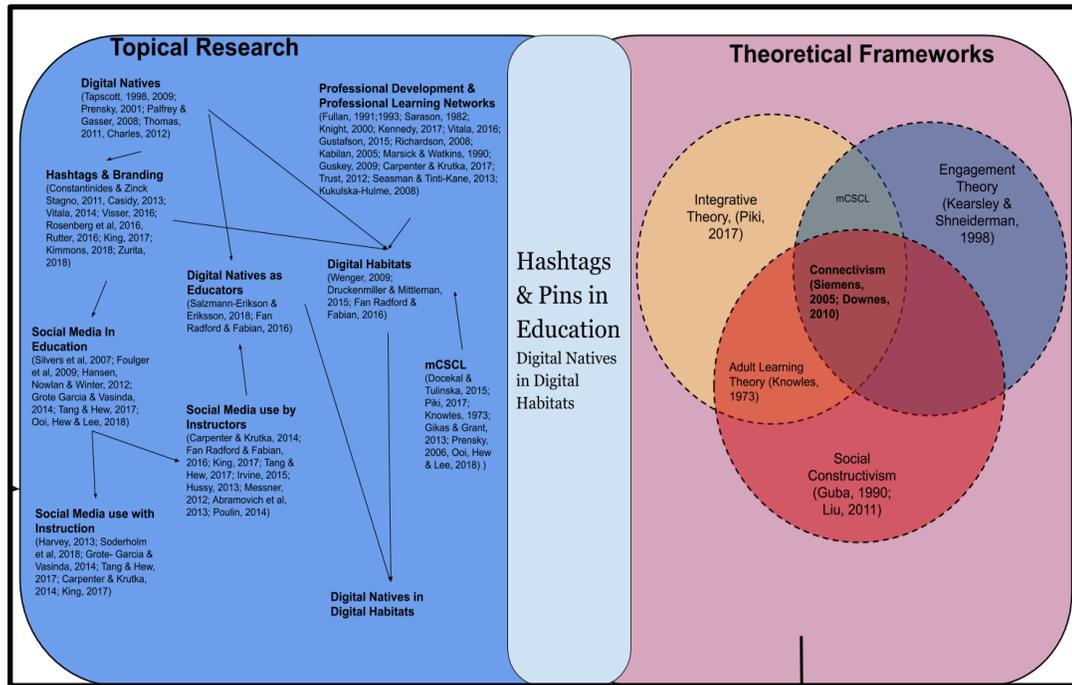
Figure 3. Topical and Theoretical Frameworks.

Review of Literature Strands

Generational Labels

When categorizing individuals into a specific generational group, it is vital to remember that generations are shaped much more by history than chronological dates (Reeves & Oh, 2007). While years can be used as a guideline for inclusion, birth dates are not enough. Three attributes that more clearly identify the nature of a generation are:

1. **Perceived membership:** The self-perception of membership within a generation that begins during adolescence and coalesces during young adulthood.

2. **Common beliefs and behaviors**: The attitudes and behaviors that characterize a

   generation.

3. **Common location in history:** The turning points in historical trends and significant

   events that occur during a generation's formative years. (Reeves & Oh, 2007)

In order to better understand the Net Generation, or Digital Natives, it is pragmatic to have a

basic understanding of the generations and what distinguishes each one. The table shows a

conglomeration of data from various generation researchers which displays their collective

findings. You will notice that although their terminology and names for the generations may be

diametric, they all agree that the generations fall within a precise timeframe. They also

acknowledge that the individuals close to an edge of a generation, also known as *cuspers* or

fenceposts may exhibit characteristics of both of the generations to which they are proximally

located (Reeves & Oh, 2007).

Table 1

Generational Labels and dates reported by different sources

Howe & Strauss (1993)	Silent Generation	Boom Generation	13th Generation	Millennial Generation
	1925-1943	1943-1960	1961-1981	1982-2000
Tapscott (1998)		Baby Boom Generation	Generation X	Digital Generation
		1946-1964	1965-1975	1976-2000
Zemke, Raines, & Filipezak (2000)	Veterans	Baby Boomers	Gen-Xers	Nexters

	1922-1943	1943-1960	1960-1980	1980-1999	
Lancaster & Stillman (2002)	Traditionalists	Baby Boomers	Generation Xers	Millennial Generation Echo Boomer Generation Y Baby Busters Generation Next	
	1900-1945	1946-1964	1965-1980	1981-1999	
Martin & Tulgan (2002)	Silent Generation	Baby Boomers	Generation X	Millennials	
	1925-1942	1946-1960	1965-1977	1978-2000	
Oblinger & Oblinger (2005)	Matures	Baby Boomers	Gen-Xers	Gen Y NetGen Millennials	Post-Millennials
	<1946	1947-1964	1965-1980	1981-1995	1995-present

There is considerable debate among the generational experts about how the widespread access to computers and the Internet has affected members of the Net Generation (aka Millennials, Gen Y, Echo Boomer, Baby Busters, & Generation Next). For simplicity, these individuals will be referred to for the purposes of this study as Digital Natives (Prensky, 2001a). These Digital Natives the generational labels used by previous literature as shown in the table below:

Table 2

Digital Natives- previous labels

Howe & Strauss (1993)	Millennial Generation
Tapscott (1998)	Digital Generation
Zemke, Raines, & Filipezak (2000)	Nexters
Lancaster & Stillman (2002)	Millennial Generation Echo Boomer Generation Y Baby Busters Generation Next
Martin & Tulgan (2002)	Millennials
Oblinger & Oblinger (2005)	Gen Y NetGen Millennials Post-Millennials

According to Reeves and Oh (2007) "the information literacy of the Net Generation (Digital Natives) far exceeds that of earlier generations (Digital Immigrants), and that this has profound implications for how the Net Generation should be educated and trained" (p. 13). As a counterpoint, Neil Postman, the author of *The End of Education* (1995) wrote:

> To my knowledge, there does not exist any compelling evidence that PCs or any other
>
> manifestation of computer technology can do for children what good, well-paid,
>
> unburdened teachers can do. Nor is there any evidence whatsoever that children in wired
>
> classrooms do any better than children who aren't. (p. 193)

In order to better inform educational design and support these Digital Natives as students and

now as educators, we need more research about how they learn, reason, reflect and create.

(Reeves & Oh, 2007). The decision to base this research on Digital Natives was influenced by

the knowledge that these are the educators who will be impacting the profession as they transfer

from students to instructors. To better understand how these Digital Natives are changing the

profession, it is important to compare and contrast them to their predecessors, the Digital

Immigrants.

Digital Natives & Digital Immigrants

Topical research by Charles (2012) indicates that attitudes toward appropriate use of

electronic devices was tied to age of respondents. Older respondents or Digital Immigrants seem

to perceive smartphones and social media as exclusively social tools to be used at lunch or on

breaks but not as valuable for instructional tasks; whereas younger respondents (both students

and instructors) who were deemed Digital Natives responded that electronics are more of an

extension of the self and not simply a social tool (Charles, 2012). Digital Natives utilize their

electronics as part of their identity formation and evolution. They do not separate their digital

interactions into purely entertainment and interactions used to establish and maintain social

identity. (Charles, 2012). The term *Digital Native* refers to the generation born after 1980, which

has grown up in a world where digital technologies and the Internet are a normal part of

everyday life (Thomas, 2011). The following graphic shows a comparison between Digital

Natives and Digital Immigrants as presented by Unicheck (2019).
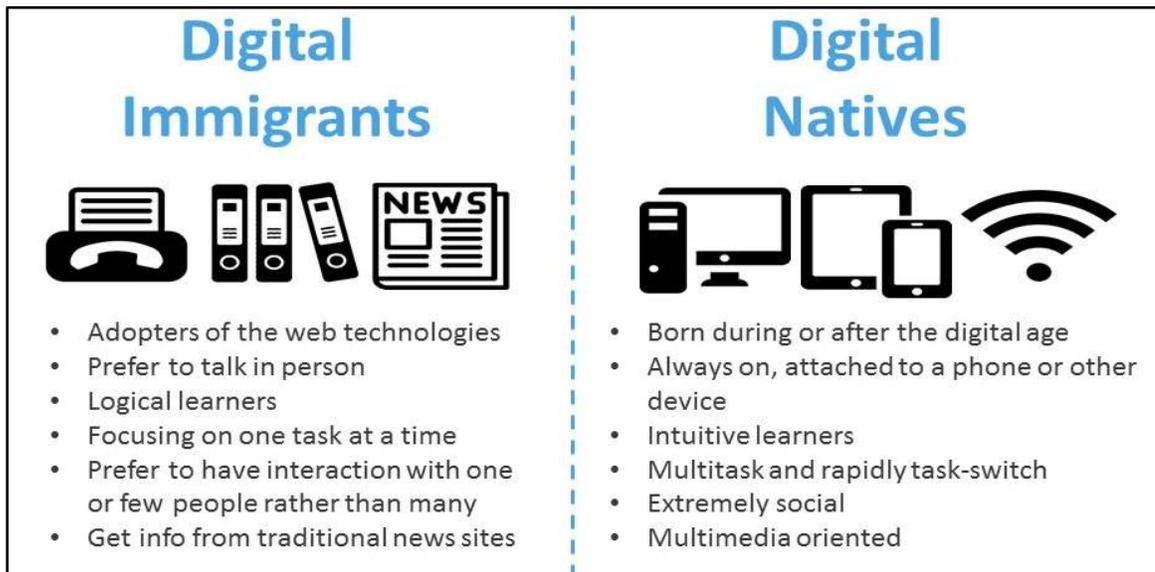
Figure 4. Digital Immigrants vs Digital Natives (Unicheck, 2019).

Degreff (2014) proposed that the Digital Immigrants divide the world into hierarchies, mostly across lines driven by values; which can include race, religion, marriage and even government. In contrast, the Digital Natives view their world more equalitarian, in a horizontal way, where there are no hierarchies. The sharing of ideas, things and even work can cross these boundaries (Degreff, 2014). While these distinctions are useful and intriguing, it is also important to mention that there are critics of the diametric distinctions and everyone agrees that there are exceptions.   Tapscott (1998, 2000) calls these Digital Native Teachers *Net Genners.* These *Net Genners* are Digital Natives who have grown up with social media. In their lifetime, they have always had access to information at their fingertips and have been able to connect with others locally and around the globe (Grote-Garcia & Vasinda, 2014). While they are adept at the technology and comfortable with the extensive use of social media, there is concern by educational leaders that early career teachers need to "develop a critical stance when evaluating the quality of educational resources" (Grote-Garcia & Vasinda, 2014, p. 38). The concept of

Digital Natives and Digital Immigrants is not without critics. McKenzie (2007) states that those

"leading the digital surge are quick to exile older folks to the dust bin of irrelevancy simply

because they were born before the iPod. Their point of view is harsh and ill-informed" (para 2).

McKenzie (2007) goes on to explain that the common distinction of either Digital Native or

Digital Immigrant based solely on birth year may be too simplistic citing work by the Kaiser

Family Foundation (Roberts, Foehr, & Rideout, 2005) as painting a much more complex picture

of the varied use of technology and the impact it has on the individual. Unfortunately, although

they are full of criticism, neither McKenzie (2007) nor Roberts, Foehr, and Rideout (2005) offer

any alternatives or suggestions to improve upon the Digital Native / Digital Immigrant model.   It

is up to current researchers to continue to define these subsets and fill in the gaps using historical

studies as a foundation.

Historically, we have come from the Electronic Information Exchange System (EIES) to

bulletin boards and email lists. Digital Immigrants have seen the invention of UseNet or

newsgroups, the WELL and eventually to Web 1.0 and then Web 2.0 (Wenger, White, & Smith,

2009).

The Whole Earth 'Lectronic Link, or The WELL, is a long-standing Internet community

that features message-board-style discussions on a wide variety of topics. Founded by Americans

Stewart Brand and Larry Brilliant, The WELL's origins trace back to 1985, when it began as a

dial-up bulletin board system (BBS) located in San Francisco. Since then it has become one of

the most respected discussion forums online (Britannica, 2019). It is interesting that while the

integration of the read / write web into all aspects of society may be more comfortable for Digital

Natives, it would never have been possible without the Digital Immigrants. It was those early

pioneers of Digital Habitats who worked together in a community of practice and called

themselves "Internauts" (Wenger, White, & Smith, 2009). Just as astronauts had to forge their

own path into space, these Internauts have paved the technological way for Digital Natives.

Today, for example, Digital Natives may rely on simple features such as a help feature. These

features only exist due to the experiences and suggestions from early Digital Habitat construction

crews of Digital Immigrants. Gunawardena, et al., (2008) proposes that "the paradigms for

learning have already evolved beyond traditional classroom models to synchronous and

asynchronous, interactive, and collaborative learning, which is further extended by Web 2.0 tools

and social networking approaches" (p. 4). Essentially, Web 2.0 tools are changing what it

means to be human. Interaction and cooperation have always been tools of survival in human

history; however, as technology has evolved those interactions and co-operations no longer must

happen in close physical proximity. Digital Habitats are allowing humans to complete complex

tasks and interact without having to be geographically close or in the same physical space.

In *Born Digital*, Palfrey and Gasser (2008) put forth that the "internet age, in which

Digital Natives are growing up, is prompting another large shift in what it means to build and

manage one's identity" (p. 19). From the perspective of a Digital Native, identity is not broken

up into online and offline identities. "Digital Natives almost never distinguish between the

online and offline versions of themselves" (Palfrey & Gasser, 2008, p. 20). On a philosophical

level, sharing content on social media may be best understood in the words of Sherry Turkle "I

share therefore I am" (Wang, 2013, p. 1). Students engage in social interactions but also keep

calendars, pictures, videos and even virtual pets on their phones and online. Digital Natives are

living more of their social lives in networked public spaces (Palfrey & Gasser, 2008); therefore, it is expected that this networking impacts their professional life as well.

If Digital Natives are establishing an identity online which is inclusive to all aspects of their life, it is not surprising that they are developing their professional identity alongside their social persona. Salzmann-Erikson and Eriksson (2018) found that there is often a co-mingling of both professional and personal hashtags within the same post. Where older generations, Digital Immigrants, were more comfortable with non-electronic media such as printed textbooks and newspapers, Digital Natives exhibit an affinity for higher interactivity in their sensorial, cognitive and neuropsychological processes (Palfrey & Gasser, 2008). Lupton (2014) found that academics also saw social media as a way to establish and promote international relationships. Digital Natives are no longer limited to their schools or workplaces to locate mentors and professional networks. They are working and socializing within the same Digital spaces which can link them to educators in the next classroom, the next state or even another country. Salzmann-Erikson and Eriksson (2018) identified a gap in the literature and proposed that the intersection of professional and private personae should be more widely included in educational research and should be acknowledged in future studies.

Digital Natives have been defined by Prensky (2001a, 2001b), Tapscott (1998, 2009), and Palfrey and Gasser (2008). Thomas (2011) attempts to critically analyze all of the information from these definitions and deconstructs it to provide three main assumptions in which these young people, Digital Natives, are said to:

1. constitute a largely homogenous generation and speak a different language (in terms of technology) as opposed to their parents, the "Digital Immigrants";

2. learn differently from preceding generations;

3. demand a new way of teaching and learning involving technology.

(Thomas, 2011, p. 4)

As we foster the pedagogical skills of educators who are Digital Natives, we must also support

their use of social media professionally.

Hashtags

Largely, what you call the # symbol depends upon your age and where you were raised.

Lips (2018) found that the majority of British individuals call the # a hash; whereas, American

Digital Immigrants call it a pound sign. Holistically, Digital Natives refer to the symbol # as a

"hashtag." This term, "hashtag," was coined in 2007 in a blog post by Stowe Boyd; however, he

was not in isolation. There were a group of bloggers in 2007 all discussing the functionality of

Twitter. Collectively, they were interested in making the Twitter experience even better for

users. Boyd (2007) began by defining the term *grouping* as *"ad hoc assemblages of people with*

similar interests". Chris Messina (2007) took this idea of *grouping* and combined it with work

by Stephanie Booth (2007), and Les Orchard (2007) in his post entitled: *Groups for Twitter: A*

Proposal for Twitter Tag Channels. Boyd was backlinked in the post and used that as a

springboard for his post *Hashtags = Twitter Groupings* and thus the term was born. Messina is

credited with the first ever Hashtag (#barcamp) used on Twitter on August 23, 2007; however,

the practice of using hashtags really began to explode during the California wildfires that same

year. Messina suggested to Nate Ritter, who was prolifically tweeting about the California

wildfires, that he adopt the tag being used on Flickr to tag images. As soon as Ritter started

using the tag, others also adopted it and #SanDiegoFire started showing up on posts related to the

fire. In 2009, Twitter finally embraced the idea and introduced Trending Topics to the platform which displays the most popular Hashtags at a given time (Lips, 2018).

As the lines begin to blur between online and offline identities, Boyd (2007) and Messina (2007) recognized that Digital Natives are seeking a way to find their tribe online and associate with other individuals who share their interests. When selecting sources for information, Alharami (2016) proposes that social media has become an alternative to traditional media. He outlines the "influence of the hashtags starts with the micro level (individuals); then it has an effect on the macro level (governments and institutions)" (Alharami, 2016 p. 55). There is a gap in literature with hashtags specifically. Alharami (2016) conducted research on hashtags but only focusing on Arabic languages and the platform Twitter. Several other studies have reported on hashtags as part of their research into social media platforms or interactions (Kimmons, et al., 2018; King, 2017; Rosenberg, Greenhalgh, Koehler & Akcaoglu, 2016; Visser, Evering, & Barrett, 2014; Vitala, 2016) but hashtags have not been the primary focus. The studies that have been conducted on hashtags had differences among the findings. Specifically, Rosenberg, et al. (2016), Zurita, Baloian and Jerez (2018) and Kimmons, et al. (2018) disagree with regard to affinity spaces created by hashtags. Kimmons, et al. (2018) found "hashtags are used for signaling school values to communities rather than for creating affinity spaces" (p. 320). Zurita, Baloian and Jerez (2018) explored the use of collaborative hashtags to facilitate learning and knowledge construction. Rosenberg, et al. (2016) found widespread use of hashtags to mark the topics of tweets has allowed educators to create affinity spaces within Twitter where they can connect and discuss topics of common interest, including, for example, educational issues within

their U.S. states. In most of these cases, Twitter has been the only platform considered.

Kimmons et al. (2018) states,

> Roughly one-third of schools in the U.S. have institutionalized uses of Twitter in some
>
> way. Twitter's prevalence leads us to wonder about the implications of embracing a
>
> commercial technology that was not designed for educational purposes.
>
> (Kimmons, et al., 2018, p. 319)

Studies must expand to take into consideration Instagram, Periscope and Pinterest, which

also utilize hashtags. It is also interesting to note that hashtags are also present on Facebook now,

due in some part, to the connectivity between Facebook and Instagram. While posting to

Instagram, which has hashtag search capabilities, there is a place to simultaneously post to

Facebook. Facebook will allow you to search for a hashtag but will also provide results with

those same keywords even if they do not include the # symbol. Governments, institutions,

colleges, and schools can no longer ignore the power of the hashtag and dismiss it as a tool of the

next generation. These Net Genners are here now and hashtag usage is proving to already be

very powerful. According to Alharami (2016) hashtags have "influenced decisions, brought

about action, and initiated debates" and their usage and influence will only expand and grow in

the future (p. 10). Hashtags are also emerging as important for schools, systems and individuals

in regards to branding.

Rutter, Roper, and Lettice (2016) identified the need for future research to investigate the

extent to which the education sector is embracing social media in its branding activities. As

educators use their university and school hashtags, they are representing the institution and

contributing to the overall branding of the institution. The added benefit of this use of hashtags

is that the communications are public and are easily adopted and redistributed by others, for

example by re-tweeting or re-pinning. These tweets, retweets and pins further endorse the

institution in the eyes of those users who are not directly involved in the interaction; however, a

multiplying effect exists for the university that effectively engages with social media (Rutter,

Roper, & Lettice, 2016). The higher education sector is struggling with the effective use of

hashtags to promote their schools and in the creation of a brand (Casidy, 2013; Constantinides &

Zinck Stagno, 2011). In many cases, the University officials are trying to use hashtags to attract

potential students and engage their current academic populations and it seems that their efforts

are resulting in confused social media campaigns and sometimes are not aligned with the

students they are hoping to attract for their programs (Constantinides & Zinck Stagno, 2011).

Casidy (2013) provides evidence to demonstrate that a clear brand orientation works to a

university's advantage; consequently, a university's brand orientation significantly relates to

satisfaction, loyalty and post-enrolment communication behavior. Digital Natives are the most

prolific users of platforms which utilize hashtags (Fan, Radford, & Fabian, 2016) and thus are

the largest influencers of branding. It will be interesting to evaluate if hashtags and social media

are transitioning from a *possible form* of communication to an *expectation* of Digital Natives and

by extension, Digital Native educators.

Social Platforms: Networking, Publishing and Bookmarking

There are many different types of social platforms. In order to understand which type are

utilized for each service, it is necessary to define the terms: social network, social publishing and

social bookmarking. Gunawardena, et al. (2008) defined *social networking* sites as those where

"users set up a profile, create formal connections to people they know, communicate, and share

preferences and interests" (p. 5). Sites where individuals are self-publishing videos, narratives

or other media, are known as social publishing and sites which use a curation process to save and

organize existing content are known as social bookmarking. (Gunawardena, et al., 2008).

Gunawardena, et al. (2008) explains that social platforms facilitate "collective intelligence

through social negotiation when participants are engaged in a common goal or shared practice"

(p. 5-6). The diagram provided by Gunawardena, et al. (2008) illustrates what the early stages

of Digital Habitat might resemble:
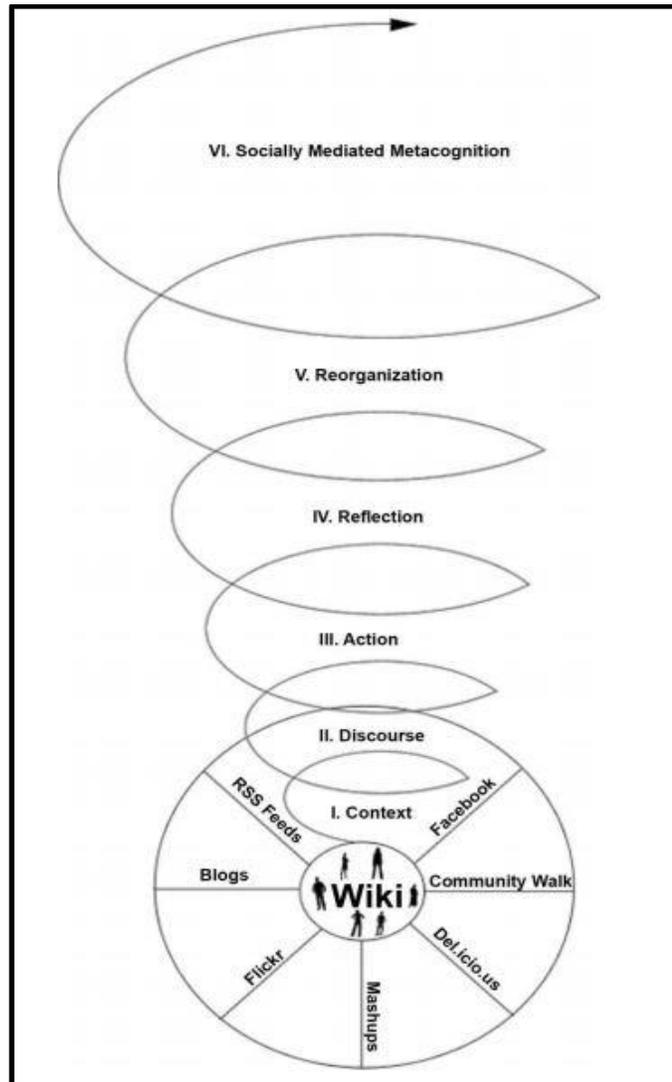
Figure 5. Social Network Spiral.

As new digital platforms emerge and Digital Habitats are becoming more complex, it is necessary to update and personalize this Social Network Spiral, created by Gunawardena, et al., (2008).

As our Digital Habitats evolve, it is becoming harder to define which services are being used professionally and which sites are being utilized personally. It will become clear in the

discussion of Digital Habitats that one functionality of these social media platforms, which can be used to differentiate them, is the ability to search using hashtags.

Platforms, such as Twitter, Pinterest and Instagram, are encouraging interaction and dialogue between users by providing tools for them to locate others who are interested in the same topics. These platforms are no longer a place to simply publish, like a website. They have moved beyond the functions of a website creation tool or blogging site by allowing users to network with others as they connect with hashtags. In a similar manner, Pinterest allows users to organize their collections of pins into boards. These boards are thematic and can also be searched and explored. Pinterest users can follow another user or even choose to follow a specific board of a user whose theme interests them. Pinterest even makes it possible to collaborate on boards together. While Snapchat, Tiktok, Facebook and Periscope are improving their networking capabilities, they are still mainly username or keyword based. Hashtags bring about an elegant specificity to social media which allows for networking to seamlessly integrate with an established platform.

There is documentation of social media use by teachers in a variety of educational settings (Grote-Garcia & Vasinda, 2014; Hansen, Nowlan & Winter, 2012; Ooi, Hew, & Lee, 2018; Tang & Hew, 2017). The major focus of research on social networking tools in education has concentrated on the K-12 setting (Barbour & Plough, 2009; Bauman & Tatum, 2009; De Souza & Dick, 2008; Kite, Gable, & Filippelli, 2010; Taranto, Dalben, & Gaetano, 2011; Zula, Yarrish, & Pawelzik, 2011). While there have been some studies on social networking tools within teacher education (Brady, Holcomb, & Smith, 2010; Daves & Roberts, 2010; Silvers, O'Connell & Fewell, 2007; Foulger, Williams, & Wetzel, 2009; Pellegrino, Goldman,

Bertenthal, & Lawless, 2007; Poulin, 2014), studies have not focused on how these Digital Natives use these tools in their professional practice once they complete their teacher education programs. Research up to now has focused on how these Digital Natives are using social media in their classrooms.

Social Platform use in Instruction with Students. Some research has been conducted on how teachers use social media in their classroom's instruction with their students. Harvey (2013) surveyed 8,000 faculty members about their use of pedagogical social media and found that 41% of respondents reported using social media in their classrooms. It is also interesting that Digital Natives are so comfortable with the production and consumption of this "user-generated content" (UGC) found on many social media sites (Soderholm, et al., 2018). Grote-Garcia & Vasinda (2014) proposed that an increase in pedagogical use of social media could be linked to a loss of pedagogical skills when teachers "stop designing curriculum and instead rely solely on commercially produced curriculum" (p. 42). Tang and Hew (2017) identified 51 publications from peer-reviewed journals and analyzed their content for the specific ways that Twitter was being used and the possible impacts on student learning. One of the major findings of Tang and Hew (2017) was that almost all research has been focused on student's use of Twitter and there is a gap in the literature and a need for "more research that examines the perspectives of course instructors use of Twitter" (p. 112). In fact, of the studies conducted on Twitter, only a few examined Twitter use by instructors (Carpenter, & Krutka, 2014; King, 2017).

Instructors use of Social Platforms Professionally. Carpenter and Krutka (2014) developed a mixed methodology to collect data about educators' use of Twitter; however, no

clear conclusions were drawn because they found that respondents reported a "intense and multifaceted use of the service" (p. 414). More than half of the Digital Natives surveyed by Fan, Radford, and Fabian (2016) reported using social networking tools and social bookmarking. King (2017) found that "educators who use Twitter as a professional learning network will have a much more positive self-efficacy in their respective contexts, thus translating correlatively to increased student achievement" (p. 17). Based on their findings, King (2017) and Carpenter and Krutka (2014) proposed many avenues for additional study. While Carpenter and Krutka (2014) identified the same gap as Tang and Hew (2017) with regards to a lack of research on Twitter use by educators, as opposed to student usage. Carpenter and Krutka (2014) did point out that the limited research that has been conducted on Twitter that is focused on instructors' usage, not student usage, has centered on higher education faculty. They suggested that more research is needed at the K-12 level and specifically with "younger and less experienced teachers…[and] whether factors such as the immediate demands of the first few years of teaching or the public nature of Twitter discourage novices from microblogging for professional purposes" (Carpenter & Krutka, 2014, p. 430). It will be interesting to see which platform is being utilized the most by Digital Native educators and selected as their Digital Habitat for professional learning, professional development or to gather instructional inspiration or lesson materials. Is Twitter the transformative platform where they are carving out their niche or is Pinterest powerfully emerging as a more likely Habitat? As technology is constantly and expanding and changing, the study may also reveal other potential Digital Habitats that need to be explored.

Beyond textbooks and lesson plan preparation, research implies that "Pinterest provides users with a Professional Learning Network (PLN) or as a Professional Learning Community

(PLC)" (Irvine, 2015, p. 97). Ramos and Fernández-Diego (2013) of Spain cited that Pinterest might be viable in its use in the classroom; however, their work only cited this possible usefulness for instruction as a possible source for future research. Teachers are increasingly using Pinterest to post their photographed original or adapted ideas, connect to their blogs, or re-pin the ideas of other teachers (Hussey, 2013; Messner, 2012). These topics warrant further study to include digital resources and also address why teachers choose specific resources in their professional practice.

The influence of these resources is important because of the potential impacts on student learning and use of these resources may need to be more closely considered by educational leadership (Abramovich, Schunn & Correnti, 2013). Accessibility to the resources is important to teachers. It is believed that teachers spend hours searching resources to find the appropriate curriculum to meet their needs (Abramovich, et al., 2013). The accessibility of Digital Habitats, like Pinterest, frees teachers' time to provide for the needs of students. Irvine (2015) found that "lessons sought out by teachers online are driven by student needs, variety, alignment to state standards, and student learning needs" (p. 74-75). Irvine (2015) also found that teacher learning was also highly impacted by the use of online resources. Ninety-three percent of the undergraduate education student participants in the study reported that when they used social networking tools, they felt more connected and a better sense of belonging in their teacher education learning community. (Poulin, 2014, p. 97) Poulin furthers that "teachers who rely on online resources practice self-growth, collaboration with fellow educators, and they are flexible in their own learning" (p. 90). Pinterest was in its infancy in 2015 so it will be interesting to see how these interactions of teachers have matured and determine if Poulin (2014) and Irvine's

(2015) research has weathered time well or needs to be updated. It will be informative to identify if Digital Habitats are providing new access to previously inaccessible mentors for these Digital Natives.

Jones (2017) indicates that collaboration with a mentor is still an effective resource for novice teachers but we need to update our definition of a mentor to include the online interactions that educators now have with digitally-accessed role models and collaborators. Mentoring, as described by Kram (1983), needs to be revised to include collaborators that are available using Digital platforms like Twitter or Pinterest. In order to explore this professional use of social media, we must analyze the integrity of social media, trust in stranger information and the confidence individuals have in *digital traveling.* (Soderholm, et al., 2018). *Digital traveling* is the concept that individuals are no longer limited by their physical, in-person, experiences. The global world is now accessible using technology and *digital traveling* gives access to information from diametric locales and individuals. Soderholm, et al. (2018) found that trust in information obtained from social media can be equated to trust in information from a stranger while traveling; thus, use of mobile computer supported collaborative learning (mCSCL) is a form of *digital traveling.*

Salzmann-Erikson and Erikson (2018) also discusses this idea of digital traveling by using this analogy: The images displayed on social media present to others where you are on this journey, how close to the "top of the mountain" you have come, or show the setbacks encountered along the way. Following this journey analogy, the "posting of images on social media adds to a collection of memories, similar to writing postcards to those back home" (Salzmann-Erikson & Erikson, 2018, p. 242). Personal interactions can happen online and

collaborative relationships can form using technology. These collaborations are not exclusive to

social interactions and are pervasive into all aspects of Digital Natives' lives, including their

professional learning and the fulfillment of their instructional and pedagogical goals

Of the educators using social media for professional reasons, many of the studies focus

on professional development (Abramovich, et al., 2013; Tang & Hew, 2017; Ooi, Hew, & Lee,

2018) and the development of professional learning networks (Abramovich, et al., 2013; Irvine,

2015; Trust, Carpenter, & Krutka, 2017).

Professional Development vs Professional Learning

Professional development, which *happens to* teachers, is often associated with one-time

workshops, seminars, or lectures, and is typically a one-size-fits all approach (Scherff, 2018).

Scherff goes on to contrast professional learning with professional development. He says that

professional learning, "when designed well, is typically interactive, sustained, and customized to

teachers' needs. It encourages teachers to take responsibility for their own learning and to

practice what they are learning in their own teaching contexts" (Scherff, 2018, p. 1).

Professional development is focused more on the need for educators to grow individually;

whereas, professional learning retools this idea so that teachers are learning how to better serve

their students. "Professional development programs are systematic efforts to bring about change

in the classroom practices of teachers, in their attitudes and beliefs, and in the learning outcomes

of students" (Guskey, 2002, p. 381).

The most successful professional development programs in education are those that

provide regular opportunities for participants to share perspectives and seek solutions to common

problems in an atmosphere of collegiality (Guskey, 1991).   High-quality professional

development is a central component in nearly every modern proposal for improving education (Guskey, 2002).

Continuing learners, the type of professional development, and the way that educators obtain new knowledge as adults are also topics to be explored. Fullan and Stiegelbauer (1991), Fullan (1993), Sarason (1982) and Knight (2000) all found that traditional professional development struggles to show impact on student instruction. Kennedy's research in 2017 added that "teachers are motivated by professional development experiences that are personalized, interactive and relevant to their current teaching responsibilities and situations" (p. 89).

The biggest difference between professional development and professional learning is where the focus is placed. In development, the focus is on the skills and growth of the educator. In professional learning, the process is evaluated through the impact the changes have on student learning and success. Knight (2000) also reveals that educators can exhibit hostility towards forced professional learning. It may be that traditional professional development neglects the needs of adult learners (Vitala, 2016) and adult learners are better when they have choice (Gustafson, 2015; Mancabelli & Richardson, 2011). Conventional models of professional development are usually required, district-driven workshops that occur within the school building (Kabilan, 2005; Marsick & Watkins, 1990). Perhaps most importantly, research on conventional professional development and professional learning has often failed to show a transfer to the classroom and demonstrate improvements in student learning (Guskey, 2009). Transferring the principles of personalized learning and self-directed learning (Brookfield, 1984) to professional development and adult learning may be a key to get more effective impacts on education. According to Trust, Carpenter, and Krutka (2017), many faculty and staff in higher

education have turned to digitally-enhanced professional learning networks as a means for situated learning that can help them grow professionally. In fact, Scherff (2018) states that "teachers must decide to improve their practice before systemic change can happen through professional development activities" (p. 1).

Professional development is focused more on the need for educators to grow individually; whereas, professional learning retools this idea so that teachers are learning how to better serve their students. Frequently, this professional learning is completed within a network of educators with common needs and interests.

Professional Learning Networks

A personal learning network (PLN) has been defined as a "system of interpersonal connections and resources" that can be used for informal learning, collaboration, and exchanging knowledge and ideas (Trust, 2012, p. 133). PLNs have emerged to supplement or even replace conventional models of professional development (PD), which have "failed in delivering meaningful experiences" to teachers (Kabilan, Adlina, & Embi, 2011, p. 95). If a new program is to be implemented well, it must become a natural part of the educators' toolbox of professional skills (Guskey, 1991). Change in teachers' attitudes and beliefs occurs primarily after they gain evidence of improvements in student learning. Guskey (2002) says that "these improvements typically result from changes teachers have made in their classroom practices, a new instructional approach, the use of new materials or curricula, or simply a modification in teaching procedures or classroom format" (Guskey, 2002, p. 283).

Effective professional learning not only has the potential to improve both teaching and student outcomes, but can also be effective in recruiting and retaining teachers. According to

2016 research, high-quality professional learning: is tied to specific content and standards;

incorporates active learning; is job-embedded; is collaborative; provides models; includes

coaching; is sustained and continuous; and is aligned with school goals, standards and

assessments, and other professional learning activities. (Archibald, Coggshall, Croft, & Goe,

2011; Darling-Hammond, Hyler, & Gardner, 2017; Labone, & Long, 2016).   "Professional

learning that increases educator effectiveness and results for all students uses a variety of sources

and types of student, educator, and system data to plan, assess, and evaluate professional

learning" (Learning Forward, 2011)   We are seeing more use of social media by educational

professionals (Seaman & Tinti-Kane, 2013) and digital professional learning networks

(Kukulska-Hulme & Shield, 2008) as they collaboratively create Digital Habitats.

Digital Habitats

A habitat is usually defined and area that incorporates all the environmental and

biological features required for the survival and reproduction of a species. A habitat is not fixed

and it goes beyond just a community. Just as a natural habitat reflects the adaptation and

learning of a species, a "Digital Habitat is not just a configuration of technologies, but a

dynamic, mutually-defining relationship that depends on the learning of the community"

(Wenger, White, & Smith, 2009).

Back in 1973, David Woolley was one of the first to see the potential benefits of Digital

Habitats. As a 17-year-old working on the design team for PLATO (learning environment

software), he noticed it was difficult for developers in the community to track bugs in the

software and communicate. He developed PLATO notes as a way to tag and track software bug

reports. Also, in 1973, Doug Brown developed a chat function for PLATO to provide a new way

of having informal, peer-to-peer communications. In the early 1970's we also saw the invention

of electronic mail (email). It was during this time that early adopters saw the formation of the

first Digital Habitats (Wenger, White, & Smith, 2009). The term Digital Habitat was coined in

2001 by Etienne Wenger in a report that Wenger wrote for the United States government on how

Internet technologies can potentially support professional learning communities. Wenger's 2001

report contained a broad survey of technology products available and their ability to support

communities of practice (Wenger, White, & Smith, 2009). Wenger, White, and Smith (2009)

expanded the report into a book about Digital Habitats entitled: *Digital Habitats: Stewarding*

Technology for Communities. Druckenmiller and Mittleman worked to expand upon the

definition and update it for expanding technology in 2015.

Druckenmiller and Mittleman (2015) focused on design theory for Digital Habitats and

understand that with this ever expanding and changing technology it is important to "to build

capacity within the community for virtual collaboration and networking. In other words - it was

the journey that was important, not the destination" (p. 579). Druckenmiller and Mittleman

(2015) also found that the introduction of "new content management systems, combined with

social networking tools, provide a new landscape for the growth and development of Digital

Habitats' that are an integration of traditional communities of practice, made virtual, through

technology" (p. 571). Thomas (2011) added that Digital Natives' "spirit of openness is reflected

in the net generation's focus on social inclusion, evident in their interest in online communities

[of practice]" (p. 6). Poulin (2014) found that educators are using "Pinterest to connect with

educators around the globe and obtain interesting lesson ideas or instructional approaches (p.

106). Students who publish their work to a shared web space, like Pinterest, realize that they are

opening themselves up to critique, yet they are driven by their desire for professional growth and to contribute to the body of work (Coombs, Leite, & Grierson, 2010). Teachers are choosing to collaborate in these communities of practice and this collaboration increases collective efficacy, influences their attitudes toward teaching in a positive manner, and helps them develop a stronger instructor relationship with students (Miller, et al., 2010). When students use social networking tools to communicate and collaborate within their learning communities, the context changes from artificial examples to more authentic situations; situations such as teachers participating in professional development groups (Wright, 2010). A strong sense of belonging in these communities of practice leads to positive learning outcomes and sense of personal and professional pride (Perry & Edwards, 2010).

It is essential that teachers participate in professional communities of practice or professional development (Shillingstad, McGlamery, Davis, & Gilles 2015). Although professional learning communities are essential for teacher growth, King (2017) reveals that "teachers want choice for their learning, personal and professional lives are heaving with obligations that deem personalized access alluring and school districts are lumbered by budget constraints" (King, 2017, p. 16-17). It will be interesting to see if perceptions and usage of Digital Habitats are ubiquitous or diametric when also considering the demographics of the participant. Knowing that adults learn differently than adolescents is not enough anymore to design and implement effective professional growth opportunities for educators. We must also take into account the differences between these different categories of adults. We would not expect to deliver instruction the same way to all students; therefore, should we also be differentiating for adult learners as well? As we incorporate differentiation into all aspects of

education, professional development initiatives and processes continue to evolve. Kennedy

(2017) determined that "instructional leaders and policy makers need relevant information from

K-12 teachers which verifies whether or not professional development experiences are effective

and influential" (p. 11). Not only are teachers sharing lessons and advice in face-to face

settings, but they are also using social networking tools to develop new ways to exchange

information, strategies, and assessments with each other (Perry & Edwards, 2010; Poulin, 2014).

While there has been initial research on the use of Digital Habitats for educational purposes, very

limited research has examined the adoption of Digital Habitats on mobile devices. (Fan,

Radford, & Fabian 2016)

Mobile Computer Supported Collaborative Learning (mCSCL). Research is just

beginning to explore the creation of personal learning networks and personal learning

environments on a global scale (Docekal & Tulinska, 2015, p. 3770). Piki (2017) has explored

the engagement of learners in a mobile computer supported collaborative learning (mCSCL)

context but based on the knowledge of how adult learners differ from adolescents (Knowles,

1973; Knowles, Holton & Swanson, 1998), mCSCL needs to also be studied in educators.

Learning collaboratively with mobile devices is still in its infancy (Gikas & Grant, 2013).

mCSCL is being transformed by massive multiplayer online games. In these games, Digital

Natives are learning teamwork and skill building in a gamified environment. As they transition

from students into the workforce, it is not unusual that they can view their workforce and jobs as

simply another team to which they belong. Prensky (2006) details experiences that his research

participants have playing these Massive Multiplayer Online Role-Playing Games (MMORPG),

like Runescape, Clash of Clans, Toontown and Fortnite, and found that,

as you move to higher experience levels, the tasks you are required to accomplish

become more and more difficult... and you can't do this alone, no matter how much

experience you have. So, you begin to learn to play the game with others. (p. 107)

Of course, the only way these kids are succeeding in these games is by communicating,

collaborating and interacting with others in a Digital Habitat. After so much time as young

people developing this skill set and these tools, are they transferring to the workplace? The

students who were organizing massive MMORPG battles as teenagers are the same who will be

transforming the Twitter chats using hashtags and sharing pins on Pinterest as the newest

educators in the profession.

 Of course, emerging technologies, like mCSCL, do not necessarily facilitate or advance

learning processes (Czerkawski, 2013). It is important to also analyze the concerns of the

integration of these emerging technologies. Ooi, Hew, and Lee (2018) call for more studies on

mobile social learning platforms and specifically to incorporate "personal characteristics, such as

age and gender" (p. 142). This is another instance in the literature where a gap has been

identified which is related to the age of participants, such as Digital Natives, and their

professional use of social media.

We must take work by Rogers (1967), Brookfield (1984) and Knowles (1973, 1998) and

combine it with updated work by Kennedy (2017), King (2017) and Druckenmiller and

Mittleman (2015) to inform our directions in teacher leadership in an increasingly

technologically advanced society which now includes Digital Natives as both students in the

classroom and also instructors in the driver's seat.

Digital Natives as Educators

The "single biggest problem facing education today is that Digital Immigrant parents and teachers, who came from the pre-Digital age, are struggling to teach a population that speaks an entirely new language" (Prensky, 2006, p. 29). Now, those Digital Natives are not just in the classrooms as students; they are now also leading the instruction as educators. Interacting with these Digital Native educators effectively is important for many different stakeholders in education, educational leadership and administration, higher education faculty, technology leadership and even mentor teachers. We must change the way we are interacting with these Digital Native educators in our role as educational leaders and technology coaches. We must be the groundbreakers.

Digital Native research has been focused on *teaching* the members of this generation; however, we are reminded by Basso (2008) that these individuals are no longer just occupying our classrooms as students. Digital Native educators are working in our organizations, solving problems, building their networks and creating new habitats for themselves. They have different expectations of how they work and play and how those two are intertwined (Besso, 2008).

Prensky (2006) presents evidence that Digital Natives are no longer the people that our educational system was designed to teach; however, since 2006, these students have moved from the desks in the classroom to the front as instructors. Prensky (2006) also asserts that now the Digital Natives are now leading the classrooms and "no matter how much the Immigrants may wish it, [they] are not going backwards" (p. 31). This means that we must transform the profession to include these new educators and collaboratively work to enhance our skills in areas where the Digital Natives already flourish. These skills include representational competence,

multidimensional visual-spatial skills, inductive discovery and attentional deployment (Prensky, 2006). We also must help the Digital Natives foster some of the skills that have been lost, the biggest being the skill of reflection (Prensky, 2006). We must learn to accept that they do not have alternating versions of themselves offline, online, professionally and personally. They are integrating all aspects of their lives into their Digital Habitats, sometimes intertwining these aspects within a single post (Salzmann-Erikson & Eriksson, 2018).

Salzmann-Erikson and Eriksson (2018) focused one part of their study on the images posted by PhD students and their life also included pedagogic tasks. One piece of data they report is that a participant wrote that she was trying "to credit and collect credible hours of teaching practice... This week was tough and the weekend will be quite busy, so a quiet Friday night at home is exactly what you need" (Salzmann-Erikson & Eriksson, 2018, p. 241). These posts were sometimes accompanied by images of the account holder studying, completing teaching tasks or even images related to alcohol, such as a bottle of wine (Salzmann-Erikson & Eriksson, 2018). There truly is a blurring of lines between these Digital Natives personal and professional personas and it is fascinating to see what this may mean for the future of the profession. Visser, et al., (2014) states, "the ability to participate in and contribute to the collective intelligence of the education-based Twitter community seems to yield professional benefits as well as personal ones" (p. 409). Digital Natives do not seem to operate in formal register professionally and casual register personally. Sociolinguistic research may not have kept up with the technology revolution and Joos (1961) five styles of English may no longer apply to Digital Natives. Joos (1961) determined that there are five different levels of formality in language according to the table below:

Table 3

The 5 Language Registers and Examples

Register	Definition	Examples
Frozen	Language that never changes	Traditional Wedding vows, Miranda Rights, Bill of Rights.
Formal	Standard English Contractions are uncommon Abbreviations and Acronyms are explained or not used.	Speeches, Essays, Business Letters
Consultative	Less formal than standard English Contractions are common	News, Patient to Doctor, Student to Teacher
Casual	Language between friends Abbreviations and Acronyms are common	Loose sentence structure Vernacular speech Slang, regional and cultural
Intimate	Language between spouses or other close family members	Pet names Inside jokes

Register is the form that language takes in these five different situations and code switching is the ability to go from one register to another guided by context (Joos, 1961). Register can be difficult to master and relies on the intrinsic and instinctive understanding of social customs and cultural cues. Children begin to develop an understanding of register and

code switching around age five; however, lower income and education levels are associated with

a poor mastery of nuanced speech (Payne, 2005) Students who are raised in poverty tend to use

the same informal register with peers as they do with teachers and authority figures. Such

behavior and lack of code switching can result in miscommunication and even disciplinary

action (Payne, 2005). While this lack of code switching and flexible register has been observed

before, it seems to be expanding beyond income restraints and may be evident of a more drastic

abandonment of the registers altogether by Digital Natives. Differences in attitude toward

language register and holistic identity have been observed between the younger age group, and

the older staff (Fan & Radford, 2015; Fan, Radford, & Fabian, 2016; Salzmann-Erikson &

Eriksson, 2018; Thomas, 2011). Are expectations of the fragmentation of personal and

professional lives being challenged by this new generation in the workforce? Will Digital

Immigrants identify the lack of code-switching and attribute it incorrectly to poverty or lack of

education when it may just be a cultural characteristic of Digital Natives? In addition to public

and private boundaries, there also exist concerns that social network sites may blur the lines

between the personal and professional relationships between students and teachers (Barrett,

Casey, Visser, & Headley, 2012; Preston, 2011). The fact that there is a blurring between

professional and personal usage in Digital Habitats may be one of the reasons they are so alluring

to educators who use them (Visser, et al., 2014) as they have been identified as having a more

fluid concept of identity (Palfrey & Gasser, 2008). Digital Natives can no longer be ignored and

their thoughts and ideas seen as *future* when they are occupying so much of our *present*

workforce (Thomas, 2011).

The current generation of young people will reinvent the workplace, and the society they live in. They will do it along the progressive lines that are built into the technology they use every day—of networks, collaboration, co-production and participation. This is evident in the data uncovered by Fan, Radford, and Fabian (2016). They discovered:

Regarding the differences between age groups, the participants between 20 and 29 years of age were significantly more active in using some of the tools, such as social networking tools (mean rank = 54. 30), learning management systems (mean rank = 55. 60), and wikis (mean rank = 58. 27). The 30–39 age group is more engaged in using web authoring tools (mean rank = 66. 38), smartboards (mean rank = 75. 00), social bookmarking (mean rank = 66. 75), Digital stylus for writing/drawing (mean rank = 80. 13), video capture tools (mean rank = 85. 63), audio recording (mean rank = 81. 75) and audio listening (mean rank = 80. 50). The two groups "50 to 59" and "60 and over" showed the most usage among all age groups for audio recording tools and web conferencing tools. One reason could be that the majority of academics, and clinical teachers/supervisors, who have more access to these tools for working purposes, are within this age group. (Fan, Radford, & Fabian, 2016, p. 4)

Digital Natives are pushing back against outdated practices in education which they deem unfair or unsupportive of their technological needs (Thomas, 2011). When students at the University of Memphis Law School were faced with a professor who banned laptops in his courses, they reacted by signing a petition protesting to the American Bar Association claiming they had been denied technology and an up-to-date education (Young, 2008). The complex changes in our workforce in education have already happened and are continuing to evolve. We

have to get used to it, accept that the flow of knowledge moves both ways and do our best to make sure that no one is left behind (Green & Hannon, 2007). These Digital Habitats "provide [Digital Natives] with a feeling of overall connectedness in their learning community" (Poulin, 2014, p. 107). The challenge for educators is to balance the tensions that exist between the formal and informal applications of social networking tools (Madge, Meek, Wellens, & Hooley, 2009) or to redefine professional conduct to be more inclusive for the beliefs and behaviors of Digital Natives. As technology leaders and educational mentors, we must keep an open mind as we learn collaboratively and to construct a new reality in instructional technology and help our Digital Natives navigate in these Digital Habitats.

Gaps Identified in the Literature Review

After critical analysis of the information and research available on Digital Natives in Digital Habitats, a deeper understanding of the gaps in literature emerged. These gaps allowed for a more holistic view and purposeful creation of the research methodology when selecting context, participants and data collection types and analysis. Specifically, the study is situated to help fill the following gaps:

Age of Participants

Ooi, Hew, and Lee (2018) call for more studies on mobile social learning platforms and specifically to incorporate "personal characteristics, such as age and gender" (p. 142). The literature gap is related to the age of participants, such as Digital Natives, and their professional use of social media.

Digital Habitats and the Melding of Public and Private Personas

Salzmann-Erikson and Eriksson (2018) identified a gap in the literature and proposed that the intersection of professional and private personae should be more widely included in educational research and should be acknowledged in future studies. It is important to study the way Digital Habitats are increasing the interaction of private and professional lives and determine if the distinctions are still relevant in Digital Natives.

 Social Media and Networking use by Digital Native Educators

One of the major findings of Tang and Hew (2017) was that almost all research has been focused on student's use of Twitter and there is a gap in the literature and a need for "more research that examines the perspectives of course instructors use of Twitter" (p. 112). In fact, of the studies conducted on Twitter, only a few examined Twitter use by instructors (Carpenter & Krutka, 2014; King, 2017). Of these studies, none were focused on Digital Natives. This gap could even be expanded to cover Social Media and Social Networking in general. As sites emerge almost daily, it is short-sighted to limit the study to Twitter exclusively. Instead, the study will be open to revelations of other tools or sites that may be important to Digital Native educators as well.

Hashtags

There is a gap in the literature with hashtags specifically and none of the studies specifically looked at hashtag usage by Digital Native educators. Hashtags are expanding to many different online platforms and may be a ubiquitous tool which is utilized by educators in various parts of their Digital Habitat.

Summary and Implications of Literature Review

As technology continues to morph and change, it will become important to keep updating the literature with current studies to support the knowledge base that has been established. The substratum of connectivism and social constructivism are a firm foundation for the conceptual framework to base the future methodologies to uncover the recent advances in Digital Habitats and professional practices. This literature review serves as a bridge between the problem and the methodology of the case study.

Chapter 3: Methodology

This chapter of the dissertation will review the researcher's worldview and research goals presented in the introduction. Then, the chapter will present the research design and include information about the participants, procedures, data collection, and analysis process. Trustworthiness, ethical considerations, limitations and delimitations will also be discussed.

Review of Worldview and Goals of the Study

For this study, I adopted a *Connectivism* approach which was influenced by *Social Constructivism*, *Adult Learning Theory*, *Engagement Theory* and *Integrative Theory*. It is through the interaction with others that we are able to construct and learn. As we journey through life, we gather experiences and share those experiences with others to help them build their own realities. Gathering information and dedicating time to uncovering different perspectives is valuable and aids in our process of understanding on a deeper level (Stake, 2010).

Personally- I am always striving to stay abreast of all the new technologies and how they are impacting education. I believe that it helps me continue to grow as an individual as I add knowledge and skills to my toolbox. I do not like feeling like a Digital Immigrant and strive to be ever-reaching into the Digital Native world. In order to remain relevant, I strive for this knowledge to better equip me to stay ahead of the changes in my profession.

Professionally-I find myself mentoring new educators who are Digital Natives in my role as an Instructional Technology Specialist and STEM coordinator. I want to be able to converse with them about their interactions in their Digital Habitats and guide them in the best possible usage.

Intellectually- I believe that this area of research is a vast ocean to be explored and I would like to make my contribution as a Digital Habitat explorer and help discover the ways Digital Natives are using these spaces to help inform the future of education.

Research Questions

The overarching research question: **How are Digital Native educators using Digital Habitats in their professional practice?**

A qualitative research methodology was used to gain insight into the use of Digital Habitats by Digital Natives in their profession as educators. Creswell (2014) explains that qualitative approaches are useful when little research exists on the topic and the research seeks to explore a process. The central question is complex. In order to investigate in depth, the following topics and sub-questions helped guide the process.

Research Sub-Question 1:

How do Digital Native educators describe their Digital Habitats and the interactions that occur there?

Research Sub-Question 2:

How are Digital Native educators interacting with hashtags and pins in their Digital Habitats for professional learning?

Research Sub-Question 3:

How are Digital Native educators incorporating information from their Digital Habitats into the instructional practices?

Research Design

Case Study

Stake (2005) provides a format for a graphical representation of a case study which illustrates the components of the case study process. Creswell (2014) says a "visual model of

many facets of a process or central phenomenon aids in establishing this holistic picture" (p.186).
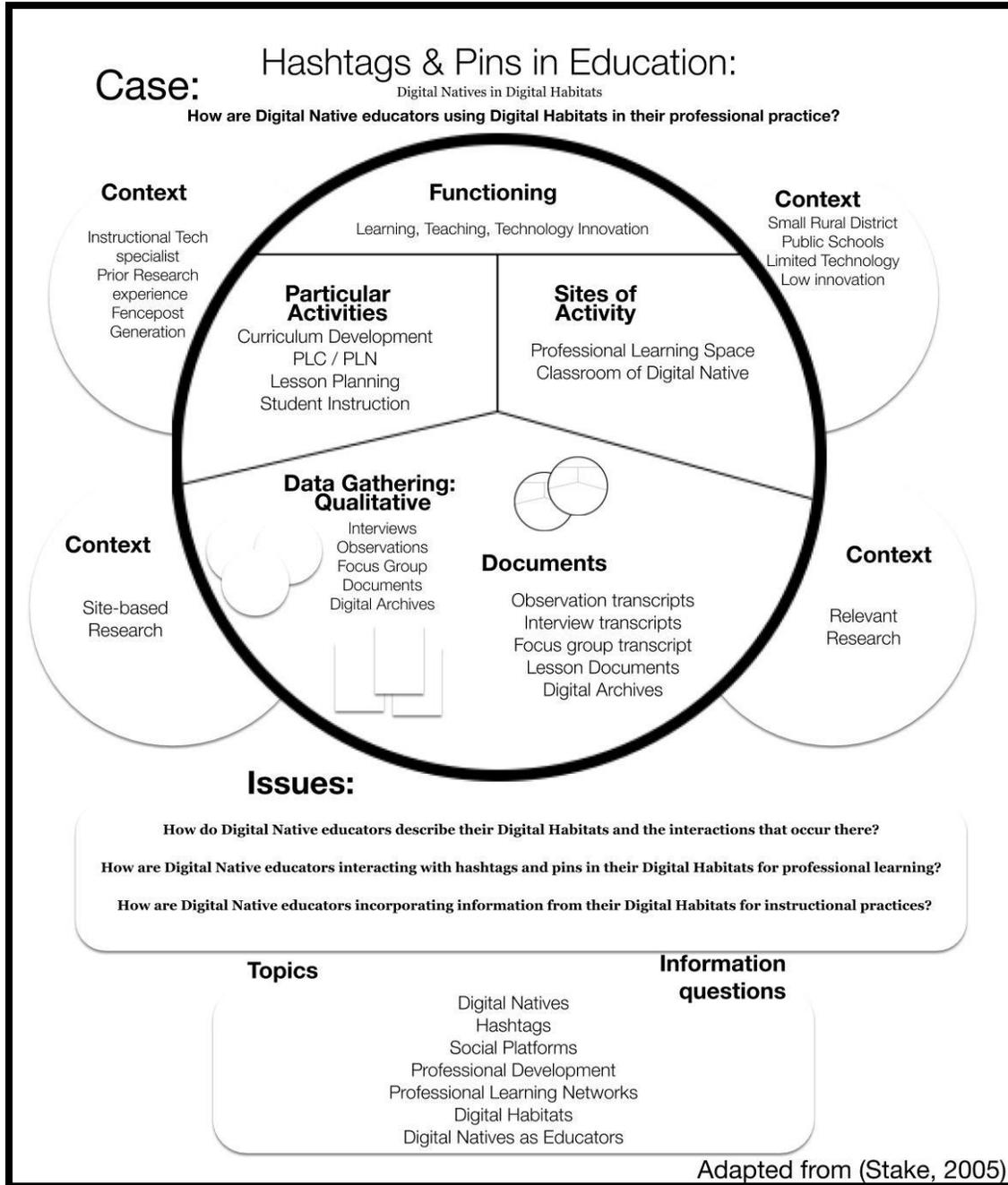
Figure 6. Graphical Representation of Case Study.

Setting

The location chosen for the case study is one of nine cities situated in a county in the

Southeastern United States. The system is giving the researcher access to participants and data

which will inform the study. The research location is not widely diverse; however, the

population has representative members from many races and cultures. 83 percent of the

population is white, approximately 15 percent is African American, and the rest are Asian or

Hispanic (United States Census Bureau, 2019). According to US Census Bureau (2019), a total

of 76 percent of resident's report having a high school diploma or higher education and 85

percent of residents have not moved within the last calendar year.

The County School System (CSS) serves approximately 13,230 students in ten

elementary schools, four middle schools, and four high schools (personal communication,

September 2019). CSS employs 39 building-level administrators and 870 certified teachers

(personal communication, September 2019). Initial surveys of the teaching population indicated

that 57 individuals responded who self-identified as Digital Natives (Appendix A; Cassidy

Survey Results, May 2019).

Overall and Sample Populations

The participant educators were selected from a purposeful sample of Digital Natives from

a local public-school system in the southeastern United States. The participant pool was

determined by a survey which helped to identify instructors who are Digital Natives and are

using Digital Habitats in their work as a teacher. The survey was administered to all certified

educators within a local county school system using Google Forms. Surveys were used for

participant identification only and the information obtained was not used in the final data analysis.

Digital Native is defined for the purpose of the study as educator born after 1980 (Palfrey & Gasser, 2008). This bounded setting provided information about Digital Native educators and their use of Digital Habitats. The study was intended to investigate Twitter, Instagram, Pinterest and Facebook; however, due to the introduction of new Digital Habitats frequently, the study was open to the possibility that the participants could have revealed other habitat elements that they are using that were previously unknown to the researcher. The information gathered was used to answer the research questions. Initially, four participants were selected but they only contained one male participant. After some collaboration with the educational leadership, two more participants were identified which were also a good fit for the study and agreed to participate. In total, six participants were selected who fit the Digital Native, Digital Habitat use criteria. The survey uncovered educators who fit the following descriptions:

1.   Digital Native born after 1980

2.   Use Digital Habitats for professional reasons, at least one-two times a month.

3.   Experience with hashtags or pins

Maxwell (1996) states that there are at least four possible goals for purposeful sampling. In this case, the research focused on the second goal proposed by Maxwell (1996) that sampling can "adequately capture the heterogeneity in the population" (p. 71). When selecting participants, other demographics, such as gender, race and age of students, were used to strive for a maximal variation within the bounded case. Below is an overview of the basic demographics of the six participants (pseudonyms used).

Table 4

Basic Demographics of the Study Participants

Participant	Birth Year Range	Role in Education	Race	Years in Education	Gender
Axel	1990-1999	MS Teacher	Caucasian	3 years	Male
Breanna	1990-1999	ES Teacher	African American	6 years	Female
Charlotte	1980-1989	HS Teacher	Caucasian	13 Years	Female
Demarco	1990-1999	MS /HS Teacher	African American	3 Years	Male
Esmeralda	1980-1989	MS Teacher	Caucasian	12 years	Female
Finn	1980-1989	HS Teacher	Caucasian	8 years	Male

Axel

Axel is a middle school teacher in his twenties. He has been teaching and coaching for three years. He self-identified as a teacher who uses a large amount of technology and online resources for his own learning and in preparing and delivering instruction for students. He is currently in an online graduate program for education. He is currently content certified and also has his gifted endorsement. The county has asked that he obtain his ESOL add on certification but he has deferred until he finishes his graduate program due to his concerns about the workload.

Breanna

Breanna is an elementary school special education teacher in her twenties. She works with students to aid in their attainment of grade level mastery in math and reading. She has been teaching for six years and has worked both as a lead classroom teacher, co-teacher and a resource teacher. She is considering leaving the teaching profession. She divulged that the time commitment to teaching with two small children is very taxing on her marriage and she struggles with balance. She brings a wealth of knowledge of assistive technology to the study.

Charlotte

Charlotte is a high school teacher who has been teaching for 13 years. She is in her mid-thirties. She is certified in a high school content area, has her gifted endorsement and has also worked in a research laboratory. She began her ESOL certification a few years ago through the local RESA but discontinued the program due to the intense workload required. She is currently in an online graduate program for her specialist in educational leadership. She has taught in two different public-school system and a private school. She used to be technology shy and says that she is really proud of how far she has come in using technology in her classroom. She credits a lot of that to her daughter helping her at home when she hits a need to troubleshoot.

Demarco

Demarco began his teaching career by progressing through an alternative preparation program for teacher certification and enjoys teaching and coaching at the middle school and high school level. He has been teaching for 3 years but this is his first year in this particular school system. He will be coaching three different sports while also serving as a special education co-teacher half-time at the middle school and half-time at the high school. He is really focused on

helping the student athletes use technology for their self-promotion to attract recruiters for college sports. He is married with children.

Esmeralda

Esmeralda has been teaching for 12 years. She has taught in two different systems and in three different schools. She is certified in a 6-12 content area and has taught both middle and high school levels. She is married with children and is politically active. She participates in many advocacy groups for philanthropies and charities. She is involved with technology in all aspects of her life and says it is hard to separate the professional from the personal.

Finn

Finn is a former content teacher who has recently transitioned to a position where he provides guided assistance to students working on classes using online instruction programs. He has been coaching and teaching for eight years. He uses technology constantly with instruction and also with coaching. Many of the tournaments and athletic events that he visits with students have hashtags and really encourage posting about matches. He found it is also a good way to scout opponents. He also says that he started becoming more technology aware because it was a way to connect and keep in contact with his child, who was in middle school at the time. He works to stay one step ahead of the students when it comes to all the new technology tools.

<div align="center">

Research Process

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The research utilized one-on-one interviews (2 per participant), a focus group, observations of educators, archival information from digital habitats of the participants, lesson plans, and curriculum planning documents. Each of these data instruments will be described in

detail in this section and were selected based upon the specific advantages that they offer the study. Interviews and focus groups were important in the study and allowed the participants to provide historical information and also allowed the researcher control over the line of questioning (Creswell, 2014). Limitations of interviews and focus group were also recognized. The researcher must acknowledge the possibility of bias and that "not all people are equally articulate and perspective" (Creswell, 2014, p. 191). During observations, it was important that the researcher was not seen as intrusive. Observations offered several advantages in this qualitative research. Observations allowed the researcher to scrutinize the information and collect data as it occurred and have a first-hand experience (Creswell, 2014). The archival information and documents collected in the study have the advantage of being unobtrusive and "represents data to which participants have given attention" (Creswell, 2014, p. 192). When selecting the data collection instruments, all of these advantages and limitations were analyzed and thoughtfully considered.

Access to Site

The primary researcher obtained permission to conduct the study within the local public-school system. Employees of the system were purposefully selected; however, no incentives or penalties were provided based on participation. The primary researcher completed all required background checks and paperwork to conduct the observations and obtain data from participants who work within the local school system.

Value of specific methodology

After careful consideration of the study's central question and related topics, Stake's

(1995) approach to case study was determined to be the most appropriate research tradition. A

case study allows researchers to gather detailed data using various collection methods on an

ongoing basis over a period of time (Stake, 1995; Yin, 2009).   Stake (1995) describes qualitative

case study as a deep examination of the uniqueness and complexities within a single bounded

case, leading to a thorough understanding of the particularity of a case within its context. Stake's

(1995) constructivist approach to case study utilizes qualitative data exclusively, including

interviews, observations, and documents.

Data Collection Procedures

Survey

Participant selection was aided by the development and distribution of a survey

(Appendix A). The purpose of the survey was to help identify individuals which had

characteristics to match the case study. The data collected was for demographic collection and

identification purposes only. After identification as possible participants in the study, the

individuals were contacted for an initial interview.

Interviews

Interviews, two per participant, were semi-structured and eight were completed in-

person, two were completed using Google Hangouts, one was completed using Voxer and one

was completed via text messages at the participant's request. The interviews were recorded or

transcribed as part of the data collection process. Open-ended interview questions were used to

"allow the participant to create the options for responding" (Creswell, 2012, p. 218). The first

interview (Appendix B) was an initial gathering of information related to the teacher's use of

Digital Habitats. The second interview occurred after the data had been initially compiled and

was used for member checking to increase validity and ask any follow-up or clarification

questions. The follow-up interview gave the participant an opportunity to further add depth to

the data and discuss the lesson plan documents, focus group discussion or any other topics which

may have extended the understanding of the research questions. Each of the interview lengths

varied based on the contributions of the participant. The shortest interview was 42 minutes;

whereas the longest was a little over two hours.

Focus Group

A focus group was used and followed an established focus group protocol. A focus

group was selected because Creswell (2012) states that focus groups yield the "best information

when interviewees are similar and cooperative with one another" (p. 218). All of the

participants in the study were Digital Natives who use Digital Habitats professionally and work

in a local public-school system. These similarities formed a good basis for a focus group and

helped yield rich qualitative data for the study. The focus group was recorded and transcribed.

The topics for the focus group was determined by the common themes unveiled in the primary

interview process (Appendix C). Maxwell (1996) cautions that "significant pre-structuring of

the methods leads to lack of flexibility to respond to emergent insights and creates

methodological blinders in making sense of the data" (p. 63). In the focus group, in contrast to

the survey or interview, educators were able to bounce ideas off of one another and this triggered

thoughts and ideas which were not be uncovered within the solo method of gathering data. It

was important to be flexible as these ideas emerged and evolved during the groups' discussion.

Lesson Plans and Curriculum Documents

Lesson or curriculum documents were requested for a lesson which was derived from a

Digital Habitat source. During the initial interview, participants were asked about lessons that

may have originated from a Digital Habitat source of inspiration. If the participant had a lesson

plan or details about the lesson, a request was made to view those documents. If possible, the

researcher would then observe the lesson included in the lesson plan document. These lesson

plans were examined for themes found in the initial interview transcripts and used to inform the

topics selected for the focus group and prepare questions for the follow-up interview.

Observations

All six participants were observed during the delivery of at least one lesson derived from

a Digital Habitat source. These observations were documented using an observation protocol

(Appendix D). The observer focused on how closely the lesson matched the online counterpart

and how impactful the participant's Digital Habitat experiences were on the format and delivery

of the lesson. How does the instructor use the selected lesson and do they modify it or enhance it

for their particular grade level or curriculum? A follow-up interview discussion of the lesson

and lesson planning documents was completed with each participant. The participants were also

observed in their Digital Habitat, if possible. Several participants invited me to view a Twitter

chat as they participated and I was also able to watch as one participant collaborated on a

Pinterest board with a student. Other participants shared their Pinterest Boards, Steemit profiles,

Group Me exchanges, Voxer groups, Instagram and Facebook connections and even their

Snapchat connections. During several interviews, participants demonstrated their interactions in

their digital habitat by demonstrating one of their interactions as I observed. For example,

walking me through their process of creating a Pinterest Board or a Steemit profile, sending a

Group Me message and letting me observe the response and allowing me to observe them

interact on Facebook and Instagram with groups and hashtags.

Data Reduction & Data Collection Strategies Matrix

The following data reduction and data collection strategies matrix was used to help in the

data collection process. These were adjusted as the data was revealed and more topics or

informational questions emerged. The data reduction provided is the culmination of the data

collection during the research process. For a larger view of the data reduction, the original

graphic can be found at https://goo.gl/XB9XNz

Research Question

How are Digital Native educators using hashtags and pins in the Digital Habitats?

Context

Georgia Educators Pre-K - 12

City School System

Participants in Digital Habitats like Twitter & Pinterest

Sub Question 1

How do Digital Native's describe their Digital Habitats?

Topics

Social Media vs Social Networking

Online vs Offline Identities

mCSCL

Informational Questions

What tools do you use for social media and social networking?

Are there differences in how you use social media professionally vs personally?

How are your interactions online characterized as professional or personal, is there overlap?

How do your online vs offline identities compare?

How does your mobile device impact your interactions in your habitat?

Where does collaboration occur in your habitat and what are the characteristics?

Possible Coding/ Categories

Twitter, Pinterest, Voxer, Facebook, Teacher Pay Teachers, Slack, YouTube, Snapchat, Instagram

Images, Lesson plans, teaching tools, life events, relationship updates

Fragmented, Integrated, unsure or mixed

Fixed, Separate, Flexible

All mobile, Mixed mobile, computer & tablet, mostly computer, mostly tablet

Facebook pages or groups, Twitter chats, Pinterest boards, follow on Instagram, Snapchat stories, Voxer groups

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Sub Question 2

How are Digital Native educators using hashtags and pins for professional learning?

Topics

Professional Learning Networks

Professional Development

Informational Questions

What tools, like hashtags and pins, are you using in your professional learning networks?

How are you using the the tools (like hashtags and pins) with your professional learning network?

How do hashtags, pins and other elements of your digital habitat aid in your professional development?

How do your experiences with online professional development compare to traditional professional development activities?

Possible Coding/ Categories

Hashtags, pins, bookmarks, google keep, shared drive folders, google classroom

Tribe location, Follow for new ideas, branding and identity

Locate & access experts, self-directed, discipline or grade level specific interaction

Formal/ Informal, Choice/ Forced, Interest, self-directed, time

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Sub Question 2

How are Digital Native educators incorporating information from hashtags and pins into their professional practice?

Topics

Selection of Instructional Materials

From Location to Use of Materials

Informational Questions

Which places in your digital habitat provide sources for instructional materials?

What characteristics influence your selection of instructional materials from digital sources?

Once materials are selected, do you save them or use them immediately? Explain this curation process

When using an instructional material found in your digital habitat, do you make modifications? What process do you follow from selection to implementation?

Possible Coding/ Categories

Twitter, Pinterest, Voxer, Facebook, Teacher Pay Teachers, Slack, YouTube, Snapchat, Instagram

Author, standard, presentation, someone in my network

Save, bookmark, use, repost

Modify, use as is, case by case evaluation

Figure 7. Data Reduction

Table 5

Data Collection Strategies Matrix

What do I need to know?	Why do I need to know this?	What kind of data will answer the question?	Where can I find this data?	Whom do I contact for access?	Timeline for acquisition
How Digital Natives are using Social Media vs Social Networking	I need to know what tools digital natives are using for social media and social networking. I also need to know if there are differences in how they are using these tools personally vs professionally.	Survey Semi-structured interviews Focus Group Twitter activity Pinterest Activity Voxer usage Group Me Usage Snapchat Usage	Survey data Interview transcripts Focus group transcripts Twitter chats-archival tweets Pinterest Boards Hudl videos Voxer Screen Shots Group Me Screenshots Snapchat screenshots	Participants	Spring 2019
How Digital Natives manage their online and offline identities	I need to know if identities overlap and how digital natives online and offline	Semi-structured interviews Focus Group Evidence of Code	Interview transcripts Focus group transcripts	Participants	Spring 2019

| | identities compare. This will help me determine if there is a shift in the amount of code switching and register identification by Digital Natives. | Switching or not | Online archives

Group Me Transcripts

Remind Transcripts | | |
|---|---|---|---|---|---|
| How Digital Natives are accessing their Digital Habitats. | I need to know what devices Digital Natives are using to access and collaborate in their Digital Habitats. This will reveal if the direction toward Digital Habitats is moving toward mobile devices or is still rooted in more stationary technological devices. | Survey

Semi-structured interviews

Focus Group | Survey data

Interview transcripts

Focus group transcripts | Participants | Spring 2019 |
| The characteristics of the Professional Learning Networks of Digital Natives | I need to know what tools Digital Native educators are using to interact and build professional learning | Survey

Semi-structured interviews

Focus Group

Online PLCs | Survey data

Interview transcripts

Focus group transcripts | Participants | Spring 2019 |

	networks and how they are using these tools.				
How Digital Natives are participating in Professional Development.	I need to know what elements of a digital habitat aid Digital Native educators in their professional development. I also need to know how these experiences compare to their traditional professional development experiences.	Semi-structured interviews Focus Group Twitter Chats Group Me Conversations Pinterest Boards	Interview transcripts Focus group transcripts Twitter Transcripts Group Me Screenshots Pinterest Board Screenshots	Participants	Spring 2019
How Digital Native Educators are selecting instructional materials	I need to know what sources in their Digital Habitats are providing instructional materials and what characteristics influence whether these materials are selected.	Survey Semi-structured interviews Focus Group Lesson Plans	Survey data Interview transcripts Focus group transcripts	Participants	Spring 2019
How Digital Native educators make the decision to	I need to know if the educators are selecting the materials to use	Survey Semi-structured interviews	Survey data Interview transcripts	Participants	Spring 2019

| use or store instructional ideas they collect. | immediately or they are storing them for future use. I also need to know if they modify the materials or what process they follow from selection to implementation | Focus Group

Lesson Plans

Observations

Pinterest

Google Photos | Focus group transcripts

Lesson Plan Documents

Observation Notes

Pinterest Boards |

Data Analysis Procedures

Collected data was uploaded into a Computer Aided Qualitative Data Analysis (CAQDAS) tool which is web-based, Dedoose (2019). Dedoose (2019) is designed to support researchers with qualitative approaches in their working with text, audio, video, images, and survey and test data. Dedoose was selected based on the ability to handle many different types of data.   Lesson plans and some observations will be text documents; however, focus groups and interviews will be audio recorded and then transcribed. Other data pieces are images and web links. Dedoose has the ability to handle these multiple forms of data collection and analysis.

Tesch (1990) and Creswell (2012) outline the steps involved in the coding process. The following diagram shows a visual model of the coding process in this study as advised by Tesch (1990) and Creswell (2012).
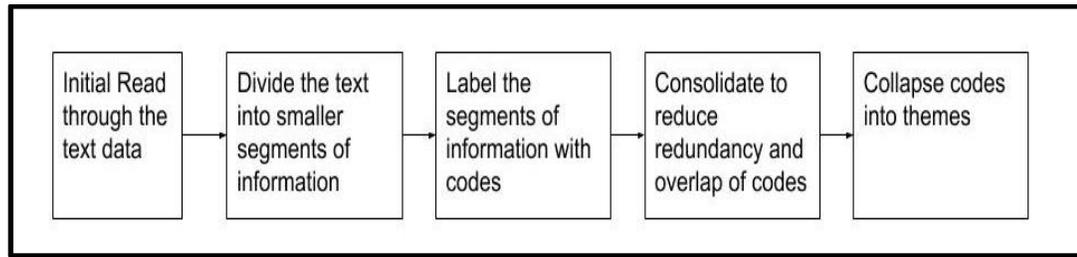
Figure 8. Visual Model of the Coding Process (Tesch, 1990).

As the data from the initial interviews was analyzed, the data was coded three different times. During the first initial read through, predetermined codes were used based on the literature review. Additional codes were added during the initial read through, as needed. During the second read through of the data, the codes were consolidated into categories to reduce the number of codes and overlap. Finally, on the third read through of the data, themes were added. The analysis used "some combination of emerging and predetermined codes" (Creswell, 2014, p. 199) as the study evolved over time.

Coding of the data from the initial interviews was a useful process to organize thoughts, ideas and questions to enrich the future interviews. Predetermined codes were developed from the literature review and based on the types of data that was expected. The initial coding was completed using a combination of Google Keep and highlighting. Once the basic coding frame was identified, the documents were uploaded and this process was made easier by the Dedoose program. These predetermined codes used to initiate the coding process are shown in the table below.

Table 6

Pre-determined Codes

Code	Description
Author	Relating to an Author or Creator being considered for evaluation
Bookmarks	Bookmarks as a means to store or retrieve information in a digital habitat
Branding	Hashtag as a type of branding or brand identification. Could be used by a business or a school or even a person.
Choice	Teachers being able to choose an activity for the professional learning or in their professional practice.
Desktop	Type of computer which is stationary and is not portable.
Email	Use of Email
Expert Access	Access to an individual who is considered an expert in a specific area or field of study.
Facebook	Facebook usage
Fixed	Identity is fixed and does not change based on any variable
Flexible	Identity is flexible and situational
Forced	Participation in an event is mandatory
Formal	Experience is rigid and has little flexibility. Formal delivery of information.
Fragmented	Interactions online are designated as personal or professional
Google Classroom	Google Classroom Usage
Google Drive	Google Drive Usage

Google Hangouts	Google Hangout Usage
Google Keep	Google Keep usage
Hashtag	Hashtag usage
Informal	Experience is relaxed and does not follow a set structure. Informal delivery of information.
Instagram	Instagram usage
Interest	Experience is based on the interest of the participant and self-selected.
Integrated	Interactions online are a mix of personal and professional in the same spaces.
Laptop	Type of computer that is portable
Modify	Instructional materials are located online but then modified before use
Network	Connection with others
Phone	Mobile communication device
Pinterest	Pinterest usage
Presentation	The instructional material is selected based on the visual presentation.
Repost	The act of re-posting or sharing information which was located from a source.
Save	Means of storing information for later retrieval
Self-directed	Participant locates and chooses the activity
Slack	Slack usage
SnapChat	SnapChat usage

Standard	Reference to Standard of Excellence
Teachers Pay Teachers	TPT usage
Twitter	Twitter usage
Unchanged	Use of an instructional material without changing it
Voxer	Voxer usage
YouTube	YouTube usage

During the initial coding, it became evident that the list was not comprehensive enough and codes were added in Dedoose as they emerged as being relevant to the research questions. Codes were added for every Digital Habitat Element that was mentioned by the participants as well as key functions of those elements, such as collaboration, lesson delivery, etc. At the end of the first read through, there were 84 different codes. All of these codes were retained, consolidated into categories and finally collapsed into themes.

Table 7

Comprehensive Code List

Access	Fixed	Intimate	Presentation
Apple News	Flexible	iReady	Prodigy
Author	FlipGrid	Kahn Academy	Quizizz
Blogs	Forced	KaHoot	Register
Bookmarks	Formal	Laptop	Remind
Branding	Fragmented	Linked In	Repost
Casual	Frozen	LMS	Self-Directed
Choice	GameChanger	mCSCL	Slack
Class Dojo	Google Classroom	Minecraft	Snapchat
Code-switching	Google Drive	Mobile	Standard
Conference	Google Hangouts	Modify	SteemIt

Consultative	Google Photos	MySpace	Teachers Pay Teachers
Desktop	Group Me	NASA	Tumblr
Discovery	GSTA	NewsELA	Twitter
Dropbox	GYSTC	NSTA	Unchanged
EdCamp	Hashtag	Pearson	Unconference
Edgenuity	Holt	Periscope	USATestPrep
Edmodo	Hudl	PHET	Vine
EdPuzzle	Informal	Pin	Voxer
Expert	Instagram	Pocket	YouTube
Facebook	Interest	Podcast	ZipGrade

One of the most confusing aspects of the coding process was the indistinction that most of the participants made between terms which are sometimes used interchangeable, such as: Social Media and Social Networking or Professional Development and Professional Learning. When completing the initial coding process, the data was coded based on what the participant said. If they said professional development, it was coded as professional development. What became evident is that many times what they were describing did not match the term that they were using. For example, many participants called Twitter Chats and Conferences a type of Professional Development where others called training sessions Professional Learning. It was imperative to revisit these definitions for myself and go back and recode for the established terms, in some case ignoring the term that was used and instead using the definition for guidance.

At the end of the first read through and coding, inductive categories were identified. The inductive codes were combined with the deductive codes and the coding categories were modified and accepted or rejected as they became evident as relevant or irrelevant using Tesch (1990) eight steps in the coding process. The data was then labeled for these categories in

addition to the initial codes. The categories that emerged were related to specific research sub-

questions. The following table details the categories that were used.

Table 8

Data Categories

Category	Description	Level 1 Code Correlations
Collaboration	Data describes collaborating with others	Facebook, Forced, Choice, Hashtag, Pin, Repost, Informal, Interest, Expert
Announcements	Data mentions making announcements or disseminating information to a group of individuals	Class, Student, Parent, Sports
Publishing / Sharing	Data describes publishing or sharing information online	Personal, Professional
Curation	Data describes the collection and organization of online material	Bookmarks, Author, Presentation
Lesson Delivery	Data describes using a digital habitat element to delivery content to students	Informal, Interest, Modify, Unchanged, Presentation,
Personalized Learning	Data mentions the use of a digital habitat element for personal learning and growth	Informal, Interest, Expert Access, Presentation, Self-Directed

Networking	Data describes connecting with a group of people professionally or personally	Conference, Branding, Hashtag, Pin, Informal, Interest, Expert
Identity	Data indicates a transmission of personal or professional character traits	Fixed, Fragmented, Flexible
Access	Data reveals how the participant was accessing their habitat	Laptop, Desktop, Mobile
Element	A location online, application or other part of the participants Digital Habitat experience	Email, Google Classroom, Google Drive, Instagram, Remind, Twitter, YouTube, Group Me, Linked In, Snapchat, Blogs, EdPuzzle, Facebook, Pinterest, Zipgrade, Ganechanger, Google Hangouts, Google Keep, Google Photos, Hudl, Pocket, Teachers Pay Teachers, Voxer, Apple News, Class Dojo, Dropbox, FlipGrid, Periscope, Steemit
Language	Evidence of language register or code-switching within the data	Register, Code-Switching, Frozen, Formal, Consultative, Casual, Intimate

Finally, a list of themes was generated that were used to work as a coding frame from which the data was analyzed looking for deeper revelations and meanings. These themes were added to the data. Themes were used to connect the data back to the research uncovered in the literature review.

Table 9

Data Themes

Theme	Description	Level 2 Code Correlations
Digital Habitat Visualization	Data which is related to the graphic representation of a participant's Digital Habitat	Element
Digital Habitat Interactions	Data indicates that a type of interaction within the Habitat has been revealed by the participant.	Identity, Access, Collaboration, Announcements, Publishing / Sharing, Curation, Lesson Delivery, Learning, Networking
Professional Learning	Participant describes of mentions professional learning.	Learning, Networking, Collaboration
Instructional Practices	Participant describes or mentions instructional practices.	Curation, Publishing, Lesson Delivery

The Dedoose program allows the user to generate a list of codes and label excerpts from data uploaded into the system. As the data is coded, the Dedoose system begins to create tables and compile information on the frequency of each of the codes. The following image shows how the Dedoose system allows you to highlight and code the data.
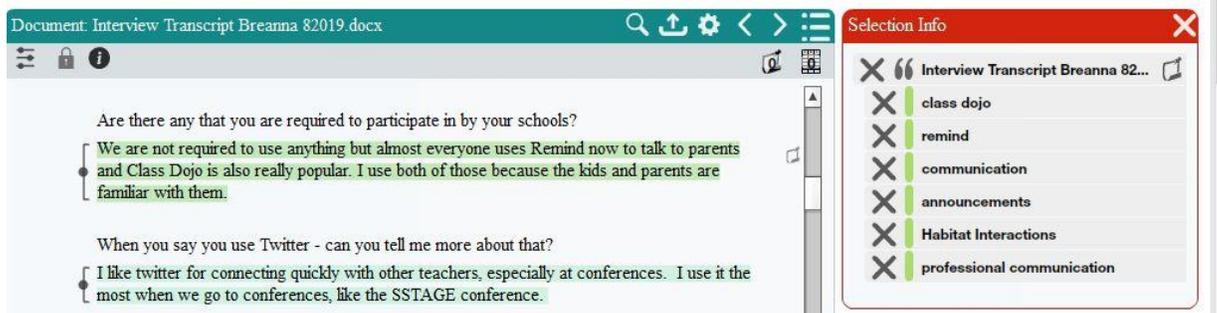
Figure 9. Dedoose Program Coding

As the data is coded, it is compiled and statistical analysis is provided on the number of

codes, excerpts, coding occurrences and correlation between codes. This information was

utilized to look for overlap of codes to determine categories and finally themes. Every effort was

made to avoid the temptation to base the themes uncovered entirely on preconceived notions or

ideas. To control researcher bias, codes, categories and themes, as well as the personalized

Digital Habitat graphic were discussed with the participants during the second interview and

additional feedback was gathered during this member checking process. As the data was

evaluated, transparency with the participants helped in the effort to let the data also show the

themes as they emerged from the transcripts and documents collected.

Validity of Interpretation

Trustworthiness

In order for a study to be trustworthy it must have credibility, transferability,

dependability and confirmability (Shenton, 2004). In order for these four criteria to be fulfilled,

a researcher must take measures and steps to protect the trustworthiness of the study. In the case

of credibility, the participants were encouraged to be honest and open by using a pseudonym for

them in the study and protecting their identity. To show that the data was dependable, the

researcher used overlapping methods of data collection (interviews, focus groups, documents and

observations) and reported the data in full detail. Data from multiple sources aided in

triangulation and analysis. This case study unveiled some common perspectives among the

participants and some unique perspectives. Triangulation was key to increasing validity and

Creswell (2014) states, "if themes are established based on converging several sources of data or

perspectives from the participants, then this process can be claimed as adding validity to the

study" (p. 201). Validity was also increased by using member checking. Participants were

provided with the major findings and themes and offered the opportunity to comment on the

findings in a follow-up interview.

Confirmability makes use of instruments that are not influenced by the researcher's prior

assumptions of beliefs. By defining those preconceived notions and looking for ways to

eliminate researcher bias, confirmability was increased. Reliability increased by using the

following procedures as suggested by Gibbs (2007), (a) check transcripts for obvious mistakes

during transcription, (b) making sure there is not a drift in the definitions of codes during the

process of coding.

Methodological Limitations

Patton (2002) argues there is no straightforward tests can be applied for reliability and

validity in qualitative research; therefore, the researcher must do their best in the interview phase

to present the data and communicate what the data reveals given the purpose of the study (p.

433). While there are strengths in using an interview process, it is time consuming to develop a

rapport and really establish a comfort level with each of the participants to yield rich and

meaningful data (Creswell, 2014). With the purposeful sampling (Maxwell, 1996) in this study, the results may not yield practical generalizations to all educators. Limiting the study to Digital Natives, gives only a snapshot of the educators we have working in classrooms today. When we further limit the participants to those who interact regularly in a Digital Habitat, we are able to gain useful knowledge about that interaction; however, this may not be a norm and these educators may be a unique subset. It will be up to the reader to critically analyze the study and findings and determine if the themes uncovered can be applied to their unique educational settings.

Additional Limitations and Delimitations

Professionally, I interact with individuals online on Twitter and Pinterest to extend my knowledge and educational growth. Since I value my Digital Habitat, online professional learning and educational networks so highly, I made it a priority to disallow this to influence my interpretation of my research results. I was careful not to allow my personal feelings about Digital Habitats influence the way I analyzed and approached my data. One of the assumptions I had about online professional learning was that individuals are initiating the interaction independently. Initially, I thought that participating in Twitter chats or looking for materials on Pinterest would be internally motivated. I am aware now that this may not be the case. During this research, I was made aware that some systems have mandates on Twitter chat participation or the curation of Pinterest boards. Are educators allowed to use these as a replacement for traditional professional learning? If so, how does this change the dynamic of their participation? These could be topics of additional study.

I am oriented to my topic as a participant and leader; however, I was aware that this

affected me as an observer. My interactions and research influenced the group dynamics and it

was important that I recognized that during the process. The peers in my professional learning

groups and the Twitter chats I observed do not seem to be affected by my research but it was

important to recognize that this could have been a concern. My initial concern that simply

knowing my research topic is based on the chat or Pinterest interaction would actually change

the interaction itself seemed to be unfounded. I did not notice any observable difference. All of

these were important to consider as I was collecting and analyzing data.

I also considered the political motivations behind the choices that individuals make.

Individuals may be participating in educational social media as a way to promote their own

agenda or gain power within these elite educational groups. It may not have anything to do with

professional learning or selection of educational materials. I was cautious and attempted to

uncover if educators are participating for reasons beyond the parameters of the study and if the

sociopolitical influence is a convoluting factor. I had to decide how I would determine the

motivation for the choices that individuals make. It was also important to recognize the role

social media, like Twitter, is playing in our government and the interactions with elected

officials. More individuals may have discovered Twitter from the mention in the media or their

curiosity over the role Twitter is having in the current controversies in the Presidential

administration. This could change the dynamics of these chats and their political slant.

As the curriculum director of Georgia STEM, I am motivated by my agenda to help

spread STEM instructional materials to educators in Georgia in the most intuitive and efficient

mode as possible. This agenda makes me invested in the outcome and analysis of the data;

however, it does not influence me in either a positive or negative way towards the results. No

matter whether the study finds that educational social media are or are not changing the way educators communicate, Georgia STEM may use that information to drive their marketing and disbursement decisions. My initial hunches toward my topic was that educators were using Twitter to communicate with other educators allowing them to access individuals outside of their local area and interact with experts in their field as a form of professional learning. I also thought that they are procuring and accessing instructional materials using Pinterest. They are able to spend less time on search engines curating materials and are instead building boards on Pinterest and sharing these resources. These intuitions were based on my personal experiences as an educator today and also on my talks and interactions with other educators. Informally, I had discussed my topic with other educators and gathered some basic information for my initial ideas before the formal study began. I was hopeful that I would gain insight into the ways educators were changing their acquisition of materials and communication. It was difficult to unveil the information within all the layers of data and I was right to be concerned about the process; however, I remain excited about the plethora of information that I was able to gather. I continue to be engaged with the research process and passionately curious about my evolving conceptual framework, research design and data analysis even as the study is concluding and I am approaching future possibilities for study.

Ethical Considerations

Every effort was made to adhere to all of the ethical guidelines of research. Lichtman (2013) outlines the major principles of ethical conduct as: do no harm, privacy and anonymity, confidentiality, informed consent, rapport and friendship, intrusiveness, inappropriate behavior, data interpretation and data ownership and rewards.

In order to conduct research at Kennesaw State University, each researcher must pass the appropriate ethics in research training. This CITI training must be current and completed within the past three years. (https://research.kennesaw.edu). An application was completed to the International Review Board to conduct this study using human participants. The approval from Kennesaw State University was also accepted by the local County School System.

The consent of each participant was gathered using the Kennesaw State University template (https://research.kennesaw.edu/irb/consent-templates) before any data collection began. Each participant was advised as to the purpose of the study and their privacy and confidentiality was, and will continue to be, maintained. The research study was designed to do no harm to the participants. Appropriate rapport and boundaries were established to limit the possibility of artificial friendship forming through the research process. The research questions were not excessively intrusive and the participants were advised that if they felt any question was intrusive, they were allowed to refuse to answer at any time. The researcher strived to be professional at all times with the participants. Every effort was made to not misinterpret any of the data and to use it in a way that represents the participants. The researcher provided no financial incentives for participation.

Summary

This chapter provided a detailed description of the worldview and goals of the study, the research questions and research design. The setting and populations were described as well as the research process and how the researcher was provided access. The value of the qualitative methodology was outlined along with the data collection and analysis procedures. Merriam

(2002) states, "colleagues and other researchers will want a detailed description of the

methodology in order to assess the study's contribution to the field" (p. 15). Finally, validity,

limitations and ethical considerations were presented.

The following chapter, chapter four, presents the findings of the qualitative study. The

chapter goes into explicit detail to illuminate the reader on the Digital Habitat description

provided by each participant as well as the themes that emerged from the data coding process

regarding their usage of their habitat for professional learning, professional development and to

locate, store and retrieve instructional materials.

Chapter 4: Findings

This chapter will present the findings from the current study. The purpose of the study was to gain insight into the use of Digital Habitats by Digital Natives in their profession as educators. The observational and narrative data presented in this chapter will strive to reveal some insights into the following sub questions:

(1) How do Digital Natives describe their Digital Habitat and the interactions that

   occur there?

   (a) Defining a Digital Habitat

   (b) Elements of a Digital Habitat

   (c) Digital Habitat Visualizations

   (d) Interactions in a Digital Habitat

   (e) Identity in a Digital Habitat

   (f) Accessing a Digital Habitat

(2) How are Digital Native educators using hashtags and pins for their professional

   learning?

   (a) Professional Learning Networks

   (b) Professional Development

(3) How are Digital Native educators incorporating information from their Digital

   Habitats into their instructional practices?

   (a) Selection of Instructional Materials

   (b) Storage and Organization of Digital Habitat finds

   (c) Transition from Location of Materials to Usage in Instruction

The initial part of this chapter will present how Digital Natives describe their Digital Habitats. It will focus on the elements of the Digital Habitat and the interactions that occur in those habitats. There will also be information on the participants offline and online identities, and their engagement with mobile Computer Supported Collaborative Learning (mCSCL). Data will be presented next which highlights how these Digital Natives are using hashtags and pins in their professional learning and professional development. Finally, the chapter will conclude with the ways that educators are locating, storing and incorporating their Digital Habitat acquisitions into their instructional practices.

Defining a Digital Habitat

Each of the participants were asked what they thought encompassed a Digital Habitat. Overall, all of the participants broadly defined the term to include any "location online that you visit frequently" (Demarco, personal communication, May 28, 2019), interactions "made by going on the internet" (Breanna, personal communication, May 29, 2019), or "connections I make using my phone" (Charlotte, personal communication, May 30, 2019). To simplify, a Digital Habitat to these Digital Natives was any space or interaction which makes use of technology that they utilize consistently to make connections to others.

Elements of a Digital Habitat

Collectively, the Digital Habitats described in the study show the plethora of locations and interactions which Digital Natives experience in their daily online work and play. The six participants revealed a myriad of Digital Habitat Elements. As the data shows, there was great

overlap within the participants for some aspects of their Digital Habitat; however, there were single outliers that also emerged. It is important to also indicate that these elements were not simply sites that were visited once or even sporadically. These elements were provided by the participants to meet the criteria of being a consistent and frequent contributor to their Digital Habitat.

Digital Habitat acceptance and rejections.   One of the revelations through the Digital Habitat graphic formation was the variety in the habitats and how they overlap in many of the selected applications that these Digital Native educators are using. Some discussion in the focus group (August 10, 2019) was on the elements of their habitats that the participants accepted and also on applications or items that they tried and rejected. Some of the rejections from the habitats reveal what makes an application or online location desirable to be adopted into a Digital Habitat. All of the following revelations are from the focus group, unless otherwise noted.

When asked about applications that they may have tried but never made it to consistent usage, Esmeralda says,

> Myspace was probably the biggest one. At one time, everyone was on there. We all modified our profiles and that is the first time I really learned anything about coding. You had to use HTML to make backgrounds and music play on your profile. I wanted mine to look cool so I learned how to code, just for that

Charlotte exclaimed that she had forgotten that and responded, "Remember that people use to make money selling profile code. That was crazy. You could pay to get code to have a cool background. You also would pick your top 5 people and they would be shown on your page".

Axel followed up with "Remember Vine. I miss Vine. I think that was my favorite. I would spend hours there looking at those things". Demarco says he thinks "Google Plus was the biggest flop. I mean, who thought that Google was gonna fail at social media? I remember when it came out and everyone thought it would replace everything else but it just never took off". The discussion then turned to the applications that still exist but they have just stopped using or never really got started. Finn said that the students were using Slack so he tried it but it just never stuck with him. Axel agreed and says he is glad that they moved on to Group Me which he thinks is better. Voxer seems to be working good for some of the group but others tried it and just didn't find it useful. Breanna says, "I just don't like Voxer but I hate voicemail too. I just would rather text. I don't like listening to messages or sending voice messages so I guess that is why I never really got into that". Esmeralda mentioned Periscope. She had used it initially to live stream some of her classes but then it stopped working with Facebook and the filter at the school tends to block it so she got frustrated and gave up. All of the participants have accepted Twitter, Remind, Google Classroom, and LinkedIn and say that they find those useful and don't think that they are going to be rejected anytime soon. Pinterest, Facebook, Instagram, Group Me, EdPuzzle, ZipGrade and Snapchat were all used by some but not all of the participants. Hudl and Gamechanger were limited to the participants who were also coaches and their uses were specific to the athletic coaching part of education.

The table of Digital Habitat elements is organized with the most commonly reported elements listed at the top. There were seven elements which were included by all six participants as being a vital part of their online interactions. As the table progresses, the applications were only reported by a few participants and several elements were unique to a single participant. In

addition, a glossary is provided (Appendix E) which describes each of the elements and provides

additional information for further reading.

Table 10

Digital Habitat Elements

Digital Habitat Element	Axel	Breanna	Charlotte	Demarco	Esmeralda	Finn
E-Mail	x	X	x	x	x	x
Google Classroom	x	X	x	x	x	x
Google Drive	x	X	x	x	x	x
Instagram	x	X	x	x	x	x
Remind	x	X	x	x	x	x
Twitter	x	X	x	x	x	x
YouTube	x	X	x	x	x	X
Netflix	x		x		x	x
GroupMe	x		x	X		x
Linked In		X	x	X	x	
Snapchat	x			X	x	x
Blogs		X	x		x	
EdPuzzle			x		x	x
Facebook	x		x			x
Pinterest		X	x		x	
Zipgrade			x	X		x

Gamechanger	x					x
Google Hangouts		X			x	
Google Keep			x		x	
Google Photos	x			X	x	
Hudl	x			X		
Pocket			x		x	
Teachers Pay Teachers		X	x			
Voxer	x				x	
Apple News					x	
Class Dojo		X				
Dropbox						x
FlipGrid					x	
Periscope					x	
Steemit					x	

It is vital to also make clear that this data is time sensitive. Even after the initial interviews were completed and before this research was published, these habitats continue to evolve and change as the services and elements available continue to morph and new elements emerge. Member checking and the follow-up interview were used to help provide validity to the study.

Digital Habitat Visualizations

This section aims to present graphic representations of Digital Habitats as described by each of the participants. Each of these Digital Habitats were derived from the initial interview and member-checking was used during a subsequent interview to make sure that each of the diagrams accurately reflects the individual habitat descriptions. The basis for the initial diagram was adapted from the social networking spiral as proposed by Gunawardena, et al. (2008).
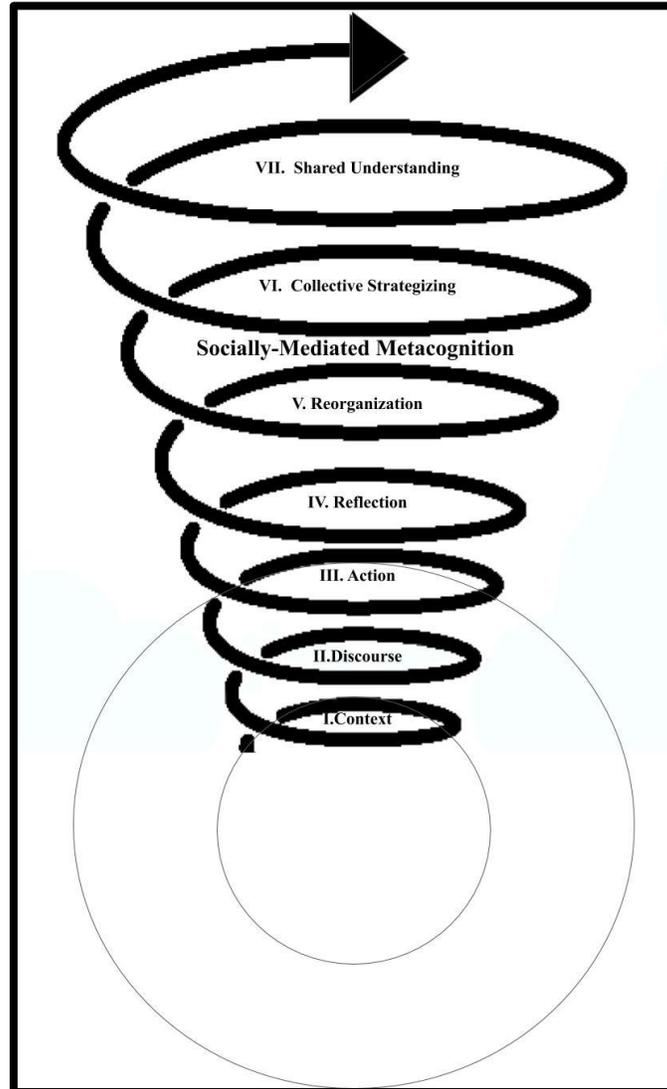
Figure 10. Digtial Habitat Diagram.

In the original social networking spiral, the spokes of the learning wheel revolved around a wiki. Gunawardena, et al. (2009) were working with the Web 2.0 tools available and utilized in 2009; however, in this study the researcher found that the spiral cannot be so rigid and must be adapted for each person. The center of the Digital Habitat Diagram is as unique as the individual. As you will see in each of the diagrams, there are significant areas of overlap as well

as some unique properties of each one. As we progress forward, it is vital to view the Digital

Habitat as a fingerprint. Forensic analysis shows us that there are characteristics of fingerprint,

such as whorls or arches, that individuals have in common; however, to try and make a generic

fingerprint leaves out many of the nuances that make them unique. Individuals will have aspects

and parts of their habitats which overlap; however, how those tools are used, arranged and

valued may be distinctive to that individual. For each of the individual participants, a

pseudonym has been selected to protect their privacy and their usernames and identifying

information from their online interactions will be masked to also preserve their anonymity.

Axel. Axel is a young male teacher born in the early 1990s who has only been in the

classroom for a few years. His Digital Habitat is influenced by his exposure to technology tools

in his personal life which he has also found professionally useful. He describes himself as a

teacher who uses a large amount of technology and online resources for his own learning and in

preparing and delivering instruction for students. Throughout the research process, it became

evident that Axel makes little distinction in his habitat between personal and professional

interactions. He even commented that, "keeping two different accounts looks shady. It is like

you have something to hide or want to put on a front to people" (Axel, personal communication,

July 22, 2019). The Digital Habitat presented for him has no distinction between professional

and personal due to his constant intermingling of information. For example, his Twitter feed in a

24-hour period displayed seven tweets during a football game using the game hashtag to interact

with other viewers, a participation in an education centered chat (#satchat), two tweets of his

child, a link to a film trailer that he is excited to view, a scripture quote and several retweets from

celebrities. For privacy reasons, I cannot reveal Axel's personal hashtag but he does have one

that he uses for all of his online interactions. Regarding the hashtag, he says,

> Yeah, we started that in college... I can go on Twitter or Instagram and just search for
>
> any of my boys' hashtags and see what that have been up to. We attach it to pretty much
>
> everything, when we had [the baby] one of the first things we did was start attaching a
>
> hashtag to posts. It's cool because I can just search for the hashtag and see all of the stuff
>
> (Axel, personal communication, May 29, 2019).

Using member checking, he agreed that the Digital Habitat presented is an accurate

visualization, even commenting, "when you lay it out like that, I mean, yeah- that is it. Wow"

(Axel, personal communication, July 22, 2019). Axel's Digital Habitat is not delineated between

professional and personal because he professes that he doesn't "really think about it that way"
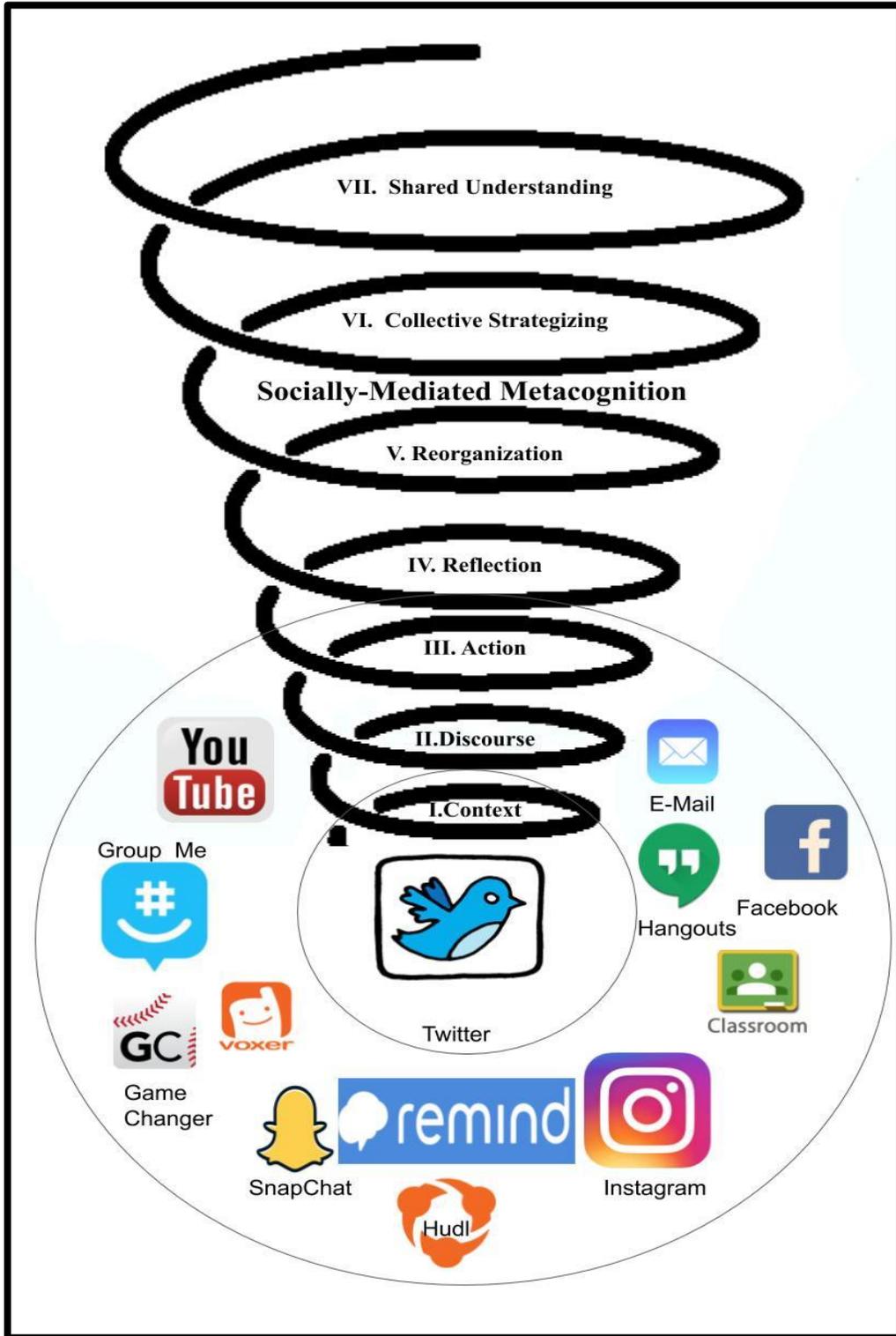
(Axel, personal communication, May 29, 2019).

Figure 11. Axel's Digital Habitat Diagram

Breanna. Breanna is an elementary school special education teacher in her late twenties. She has spent six years in the classroom and has worked both as a lead classroom teacher, co-teacher and a resource teacher. She is married with children. She has her Master's degree. Currently, she is frustrated with the teaching profession. She confesses with emotion that she is struggling to meet all of the demands of being a mom and a teacher. The time commitment to teaching with two small children is very taxing on her marriage and she struggles with balance. She brings a wealth of knowledge of assistive technology to the study. She does distinguish between her personal and professional online presence, "mostly for convenience" (Breanna, personal communication, May 29, 2019). She tends to have specific parts of her habitat that she uses for education tasks and interactions and other parts of her digital interactions are on a more personal level. For example, she states, "I can't think of any reason why someone would be using Snapchat professionally and I don't really use Remind and ClassDojo for anything personal so there are definite distinctions" (Breanna, personal communication, May 29, 2019). Using member checking, Breanna was happy with her Digital Habitat graphic commenting, "can I keep it, I want to hang it up by my desk" (Breanna, personal communication, July 23, 2019). We made only a slight change during the second interview. Initially, she self-reported Pinterest as being useful for the classroom but after thinking about it, she decided that it is one of the only places she overlaps, stating,

> Pinterest is the only exception. I have boards on there for everything. I keep most of my boards secret though because a lot of them are for gifts I want to make or buy. I do have some boards for units and lessons and those are public and I will share those with teachers and students. (Breanna, personal communication, July 23, 2019)

We decided to place Pinterest inside her central circle because it really is pervasive into her

professional and personal sections of her Digital Habitat.   Later, we will delve into the specifics

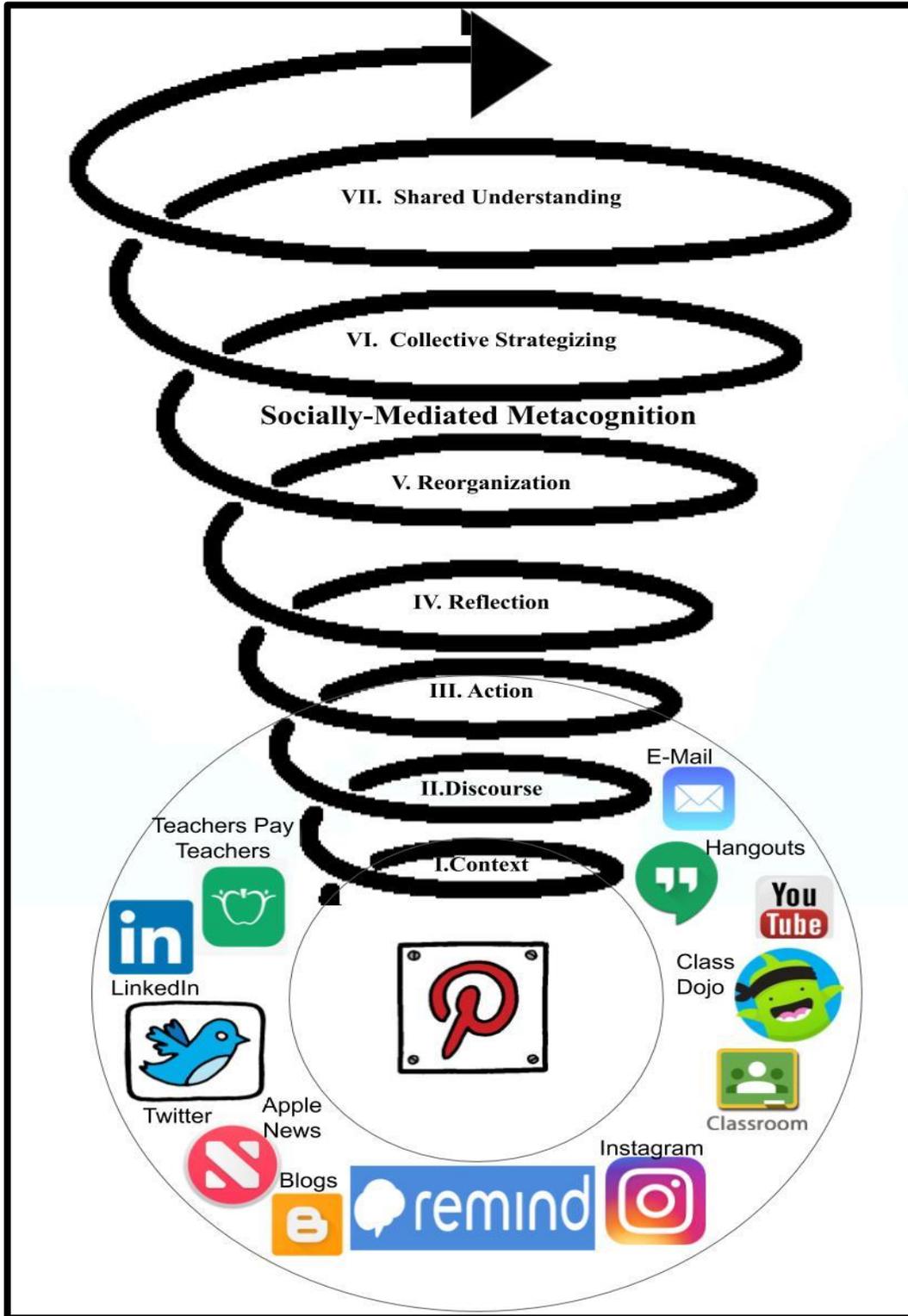of how Breanna uses Pinterest in her professional practice.

Figure 12. Breanna's Digital Habitat Diagram

Charlotte. Charlotte is beginning her fourteenth-year teaching and she is certified in

grades 6-12. Charlotte juggles her family along with her career. Charlotte is certified in content

specific area, has her gifted endorsement and has begun her ESOL endorsement. Before

beginning her teaching career, she also worked in a research laboratory. She is currently in an

online graduate program for her specialist in educational leadership. She has taught in two

different public-school system and a private school. She used to be technology shy and says that

she thinks a lot of her current technology usage began when the textbooks that the school

currently uses became really outdated. When she hits a problem or needs help, she is grateful to

be able to reach out to her daughter who is her informal technology support person. Charlotte is

barely a Digital Native and admits that there are some applications that she associates with the

younger generation, like Snapchat. She participates in Facebook and still prefers it to other

social media sites where she maintains accounts, like Instagram. At one time, she had a

Myspace page, a Vine and a Tumblr. She still enjoys blogging and reading other educators'

blogs. She also enjoys podcasts. She started listening to podcasts when someone recommended

Serial to her and now is an avid fan of RadioLab, This American Life and Brains On! Her

central Digital Habitat locale is still Facebook but she has found that she uses it in smarter ways

now than when she first got her account back in college. Her Digital Habitat is unique due to her

collaboration with the design. She wanted to show how much her habitat has evolved over the

years so the sites that she has abandoned or ones that she no longer uses are still present;

however, the retired elements have been placed outside the circle and have been grayed out. She

commented when she saw the finished product, "I love that it shows almost a historical snapshot

of my journey. Even though some of these are no longer important to my daily interactions, they

were still vital to getting me to where I am today" (Charlotte, personal communication, July 23, 2019).
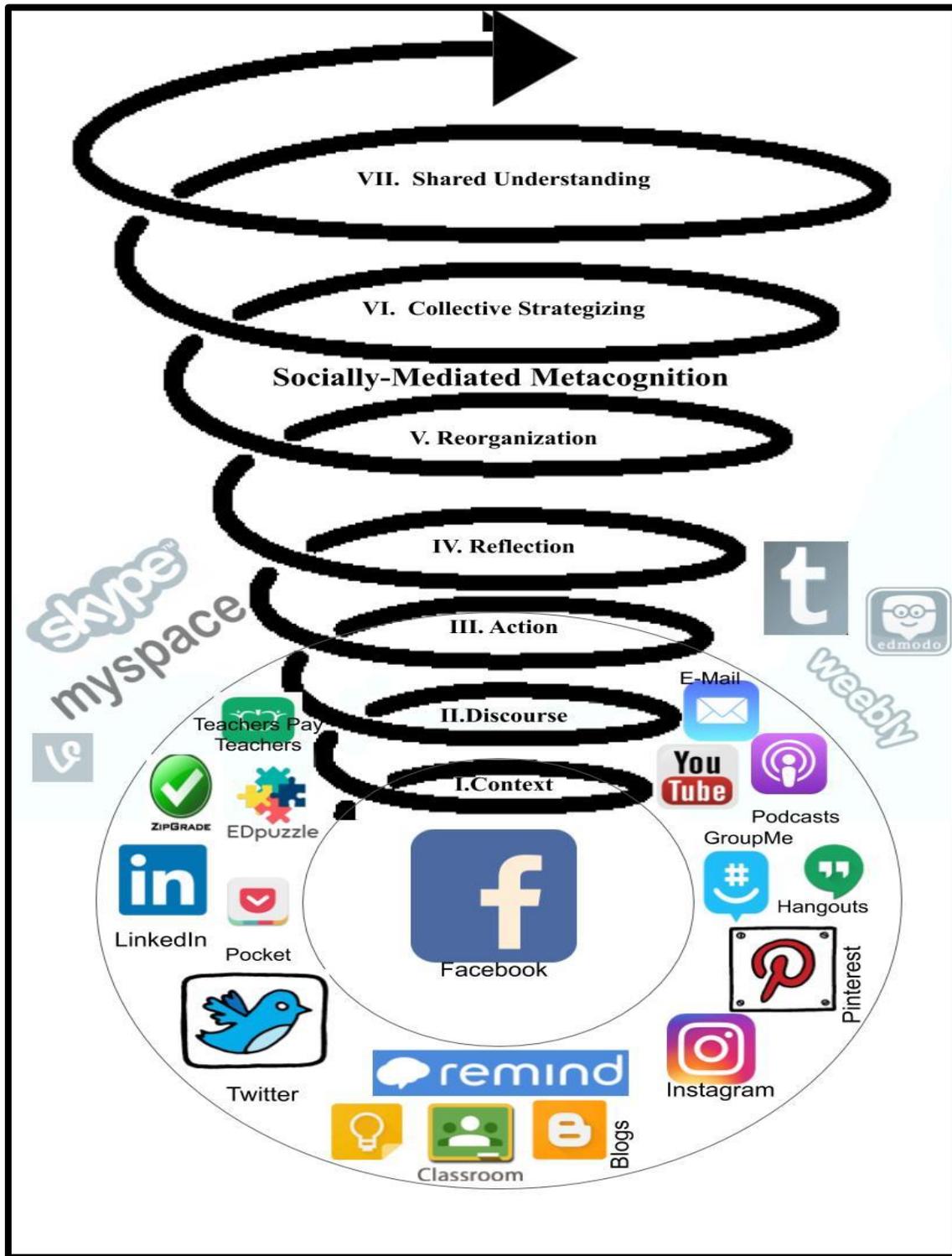
Figure 13. Charlotte's Digital Habitat Diagram

Demarco. Demarco began his teaching career progressing through the alternative preparation program for certification and enjoys teaching and coaching at the middle school and high school level. He has been teaching for three years. He will be coaching three different sports while also serving as a special education co-teacher. He credits his college acceptance and success to a teacher who helped him get all the needed information and even tutored him for the SAT. He promised himself that he would someday do everything he could to help kids in the same way. He has a passion for supporting kids in their quest to go to college. One of the ways he feels like he can make a difference is with student athletes. From his playing days, he has a lot of contacts that he is able to use to help students make connections. His primary focus is on teaching students to use social media and networking for self-promotion to attract recruiters for college sports. He is married with children.

Figure 14. Demarco's Digital Habitat Diagram

Esmeralda. Esmeralda has been teaching for 12 years. She has taught in two different systems and in three different schools. She is certified in 6-12 Science and has taught both middle and high school levels. She is married with children. She is politically active and participates in many advocacy groups for philanthropies and charities. She is involved with technology in all aspects of her life and says it is hard to separate the professional from the personal. Esmeralda, unlike the others, says that even Snapchat is useful to her professionally. She will get ideas by looking at Snapchat stories of other teachers she follows. Esmeralda uses a wide variety of technology elements and had a hard time picking her central element. She finally settled on Pinterest, simply because of "how it is so versatile and I use it for such a wide range of things" (personal communication, May 2019). She identifies as a technology pioneer and says that she is normally the first one to try new things in her department and grade level. She is adventurous in that way and has found many good instructional tools by, as she describes,

> Just diving in and figuring it out. I'm just not scared to mess up. I just figure the worst-case scenario is that it doesn't work and I lose a class period but the best case is that it is amazing and I find a new way to engage kids. It is always a gamble. (personal communication, May 31, 2019).

 With this pioneering spirit, she found EdPuzzle and Flipgrid. Just recently, she began using Steemit. Currently, she is not sure if it will be one that she uses consistently but says, "it is different and I like that it is a new concept. So many apps and sites now are just a copy of an idea. Steemit is interesting" (personal communication, May 2019).
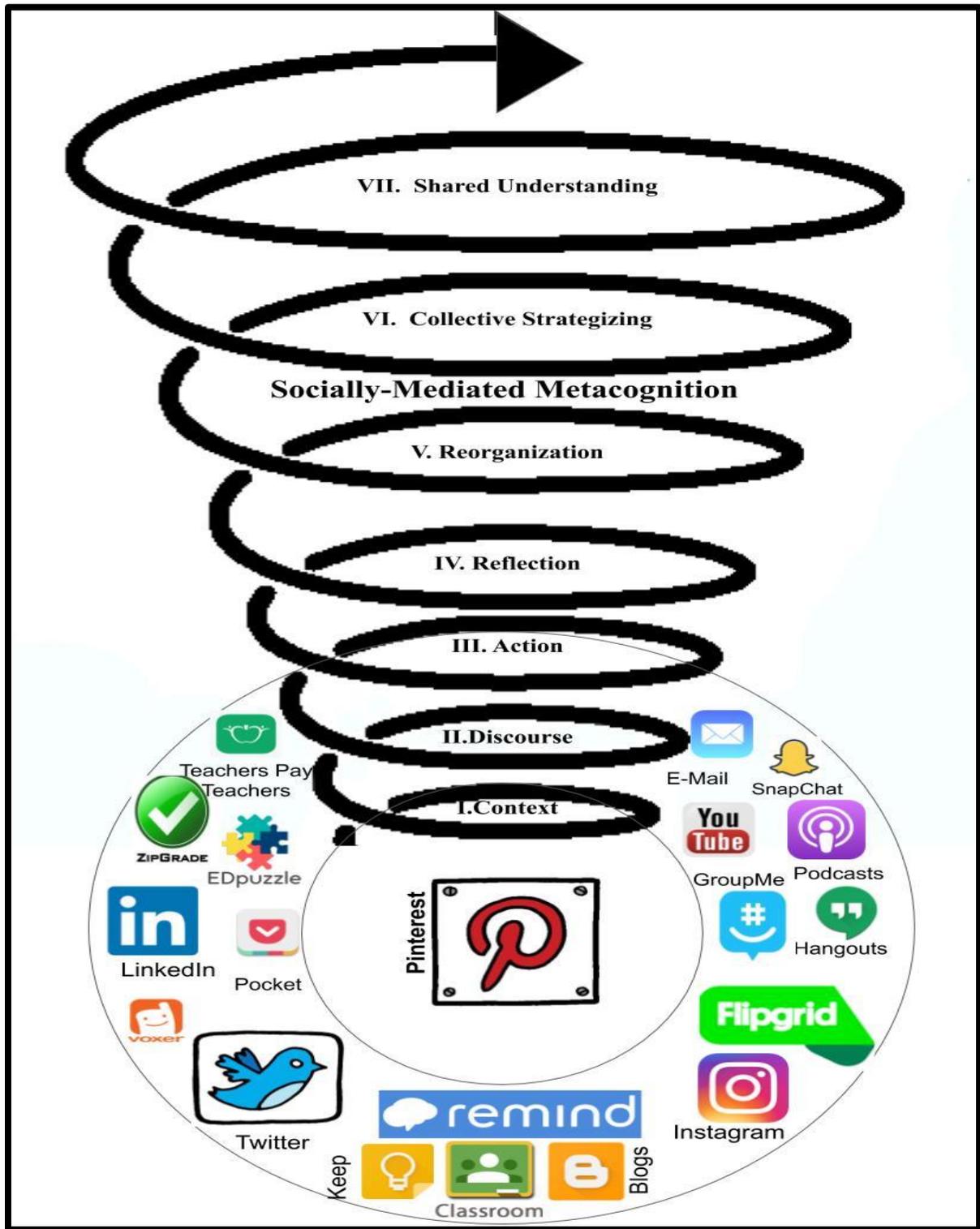
Figure 15. Esmeralda's Digital Habitat Diagram

Finn. Finn is a teacher who has recently transitioned to a position where he provides guided assistance to students working on classes using online instruction programs. He has been coaching and teaching for eight years. He uses technology constantly with instruction and also with coaching. Many of the tournaments and athletic events that he visits with students have hashtags and really encourage posting about matches. He found it is also a good way to scout opponents. He also says that he started becoming more technology aware when he started using it to keep in contact with his child, who was in middle school at the time. He works to stay one step ahead of the students when it comes to all the new technology tools.   Recently he went to a professional development session on formative assessment, Finn says,

> That was the first time I left one of those things with something I could actually use. It
> has taken some trial and error but EdPuzzle is great and I also want to start using Quizizz.
> I just don't have time to find this stuff so going to a session where you actually learn
> things instead of just listening to someone talk was great. (personal communication, May
> 28, 2019)

 He also says that he has been forced to become proficient with certain technology due to coaching. "All of the registration and results are now online and you have to navigate the platform to pick those up so I am getting better at doing that" (personal communication, May 28, 2019). When it comes to staying current with the technology changes, Finn credits that to being around teenagers. He says,

> You have to stay on top of stuff that they are using and doing. I might not be snapping
> (or whatever they call it) all the time but I know what it is and I will use it occasionally. I

think the key to not becoming outdated is to keep up with what my boys are into

(personal communication, May 28, 2019).

Finn chose Twitter as his central element due to the variety of interactions that are available and

how he can use it in his personal, teaching and coaching.

Figure 16. Finn's Digital Habitat Diagram

Interactions in a Digital Habitat

After reviewing the data on all the elements of a Digital Habitat, several common themes emerged which allowed the elements to be categorized into groups by their function and usage. The table below details the categories, their description and some examples. Due to the constant release of new applications, this list will always be incomplete and cannot be exhaustive. The examples provided were revealed during the research process but are limited by the participant experiences and revelations.

Table 11

Thematic Strands for Digital Habitat Elements

Element Category	Description	Examples
Collaboration	Useful for connecting with a set group of people and being able to converse collaboratively around a topic. You must be invited to participate in the group by the leader or another member.	Group Me, Twitter, Voxer, Slack, Hangouts, Google Suite, Facebook
Announcements	Useful to disseminate information from an authority source to a selected group of people. Primarily used for one-way communication but there is a limited response function.	Class Dojo, Remind, Google Classroom
Publishing / Sharing	Functions as a method to create and post information that revolves around an individual's specific life events, professional practice or interests. Privacy varies from completely private to completely public.	Facebook, Instagram, Snapchat, Periscope, YouTube, Twitter
Curation	System or platform for cataloging and organizing information for later retrieval. Some systems allow collections to be public and	Pinterest, Google Photos, Bookmarks, Google Drive,

	others are private or by invitation only.	Dropbox
Lesson Delivery	Application to provide content delivery to students during the learning process.	EdPuzzle, FlipGrid, Google Classroom, Blogs, Edgenuity, Kahn Academy, NewsELA, USA Test Prep, iReady
Personalized Learning	Useful for self-directed on-demand acquisition of novel information.	YouTube, Hudl, Khan Academy
Social Networking	Connecting to a variety of individuals with a shared interest. Individual connections are not pre-determined by inclusion in a list or class or restricted to invitations.	Twitter, Instagram, Facebook, Pinterest

Collaboration. Group Me and Voxer were both presented as being useful for a variety of collaborations. Axel explained that Group Me is

useful when you need to have a group of people texting but it not be blowing up your phone all the time. It runs over in the app and it makes it simple to have groups for different sports. I have also used it in college classes, it is kind of a back channel. People will get on there and talk about the quiz or paper that is due. (Axel, personal communication, May 29, 2019)

Demarco says:

We had these old walkie talkie things. They were huge and they kept going dead all the time and they were loud. Like when a fight happens and they call over the walkie talkie, all the kids can hear it too and go off running to wherever it is. Voxer is better. We just have Bluetooth headphones and now during drop off or duty, we can hear what is being

said but the kids can't. We also don't have to keep charging those crappy things.

(Demarco, personal communication, May 28, 2019)

Group Me was preferred over group texts because it keeps all of the groups organized and is

easier to navigate. There was consensus among the participants who used Group Me that it has

added value to their online interactions with the various groups to which they belong (focus

group, August 10, 2019). Voxer, Slack and Google Hangouts were also mentioned as

applications used for collaboration.

Collaboration was also described within social networks, such as Twitter and Facebook,

Twitter will be discussed in detail in the section on hashtags; therefore, a vignette of Charlotte's

Facebook experience is included here. This excerpt comes from an original post on Charlotte's

blog, which for privacy purposes we will keep confidential.

Facebook-not just for Friends. Lab had been a nightmare. Kids were really out of hand

because of the pep rally coming up and that didn't help because all of the classes were cut short

meaning I was rushed. I had gotten everything ready and set-up but I still needed everything to

go perfect for the lab to get finished in time. Days like this make me wish I wasn't teaching and

I was back in the lab. As I stand here surrounded by all the unfinished labs and wasted materials,

I can't help but wonder if I am the only teacher who feels this way. Exasperated and frustrated, I

plop down in my chair and instead of cleaning up the lab or going to the pep rally, I pull up

Facebook. I am scrolling through my feed and see a post from one of the groups I belong to for

National [Science] Teachers. One of the group members has posted a meme which perfectly

sums up my day in the lab.   As I scroll through the feed, I feel less alone and begin to laugh.

One of the teachers walks by in the hallway and joins me as I look at all the funnies. We pick

out a few to print and put on the bulletin board in the lab.
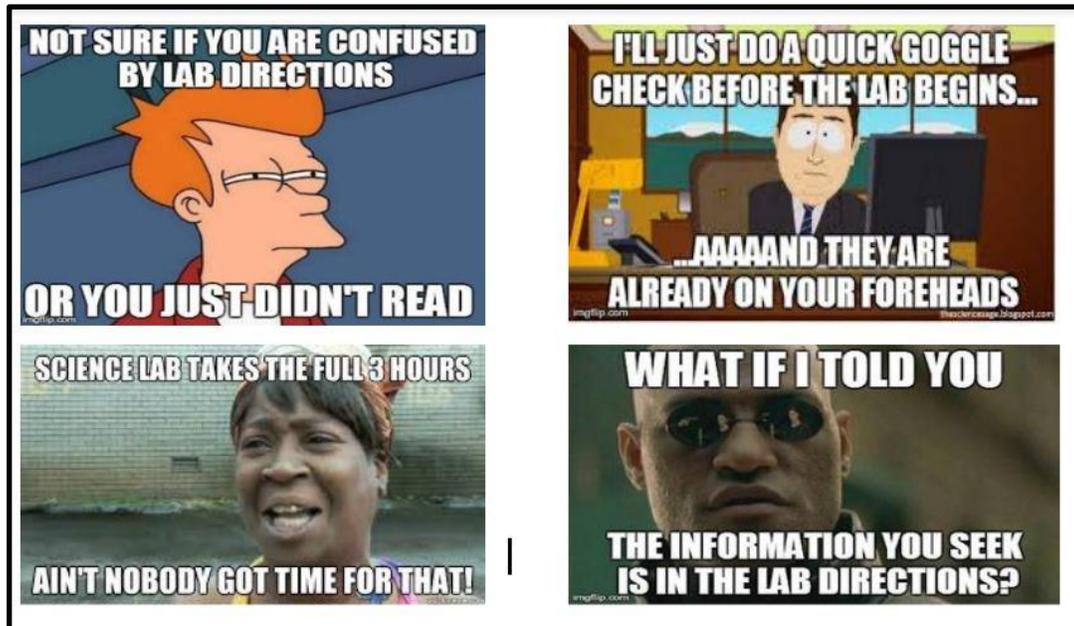
Figure 17. Facebook Group Artifacts

I keep scrolling and find another post about a lab that I have been wanting to try. I read

through all the comments and decide that I may need to modify it for my students, especially

after what I experienced today. I get excited about the possibility and make some notes on what

I need to modify and adjust it for the class. I am relieved that the frustration has passed. I feel

better knowing that I belong to this tribe of awesomeness on Facebook. It reminds me that I can

do this job and I am pretty good at it. They keep me laughing and we share ideas, failures and

successes. We welcome in new teachers and even have a few who have hung around even after

they retired. I am thankful for my Facebook "friends" who I have never even met but who I

walk this journey of education with every single step. (Charlotte's blog post, September 7, 2018)

Announcements. The participants all agreed on the usefulness of Digital Habitat

Elements for announcements. Remind was ubiquitously used by the participants to make

announcements to their students and parents. Charlotte says,

> I like that Remind will allow me to send something to everyone at a designated time. A
>
> lot of announcements I will set-up in advance and have them set to send out around
>
> supper time. Sometimes, even I am surprised when the text comes through. (personal
>
> communication July 23, 2019).

Breanna also described the use of Class Dojo with parents and students, saying

> Class Dojo lets you track behavior in real time and it sends an update to the parents. Kids
>
> are more responsive when they know I can automatically get in touch with their parents.
>
> I can also communicate announcements but I mostly use it for behavior. (personal
>
> communication July 23, 2019)

The other participants reported using Remind to announce upcoming tests, remind students about

homework and even share pictures. Google Classroom was also mentioned as being useful for

announcements and communication; however, many of the participants expressed dislike that it

did not also include parents. Charlotte said, "I put everything in Google Classroom but that

really only communicates with the student. I think there is a way to add parents now but so far I

haven't had a lot of luck using that feature" (personal communication, July). It seems like

Remind was the tool of choice and several participants commented that it was recently purchased

by their district to be used by all teachers.

Publishing and Sharing. Of all the thematic categories, publishing and sharing revealed

the most transition for the participants. All of the participants reported at least one application or

platform that they previously used for the purpose which they have subsequently abandoned and discontinued. As revealed earlier, MySpace, Tumblr, Weebly, Edmodo and Vine have all been used and subsequently retired or rejected by participants. These all have been replaced by other applications or services which the participants report have improved upon the platform function or niche. When publishing information for other educators to use, there was some consensus among participants with most mentioning Twitter, Pinterest or Instagram. SnapChat, YouTube and Periscope were also each mentioned by one of the participants. The depth of this use of publishing and sharing warranted an entire section in the findings for learning and developing in a Digital Habitat.

Publishing and sharing with the intention of engaging students evoked different responses. Axel expressed interest in trying to create a SnapChat that would engage the kids on that platform but with academic tasks or something related to the sport he is coaching. Esmeralda is convinced that "Periscope would be great if I could get it to work properly with our network and filters" (personal communication, May 31, 2019). These may be emerging platforms for publishing and sharing.

Curation. One of the main differences between the participants with regard to curation was whether they chose to use Pinterest. Interestingly, all of the female participants cited frequent use of Pinterest and none of the male participants said they found Pinterest useful. Breanna, Charlotte and Esmeralda collectively provided the most information for this section. In addition, they all provided access to their Pinterest boards for the research to collect digital artifacts. All of these participants, Breanna, Charlotte and Esmeralda, selected Pinterest as the

platform that they found the most useful for curation and organization.   Charlotte was one of the

more emphatic users stating,

> I really couldn't keep anything organized without Pinterest. I have everything on boards
>
> by topic. I guess I am such a visual person that Pinterest and I just click. I can remember
>
> what something looked like much easier than what the title was, so it just works for me
>
> (personal communication, May 30, 2019).

The participant Pinterest boards were reviewed after the first interviews and revealed

information which was used to develop additional questions for the second interview. One key

feature was the global collaboration potential of Pinterest since the majority of the posts are

independent of language due to their visual nature. All of the participants have pins on their

boars that they have used that come from an international site that when you click on the image,

the site is in a language the participant does not speak. Esmeralda shared her boards and we

went through them together. One of the first boards she started she simply named: Education.

Esmeralda shared,

> When I first got a Pinterest account it was still by invite only. I didn't even think about
>
> using it for teaching until I had had it for a while. Then, I started seeing classroom stuff
>
> on there. At first, I just put everything related to teaching or education onto one board.
>
> Now, I have moved pins to boards specific to certain topics but the original board still has
>
> some things on there. In fact, when I can't decide immediately where the pin should go, I
>
> will just throw it on the Education board and figure it out later. (personal communication,
>
> May 31, 2019)
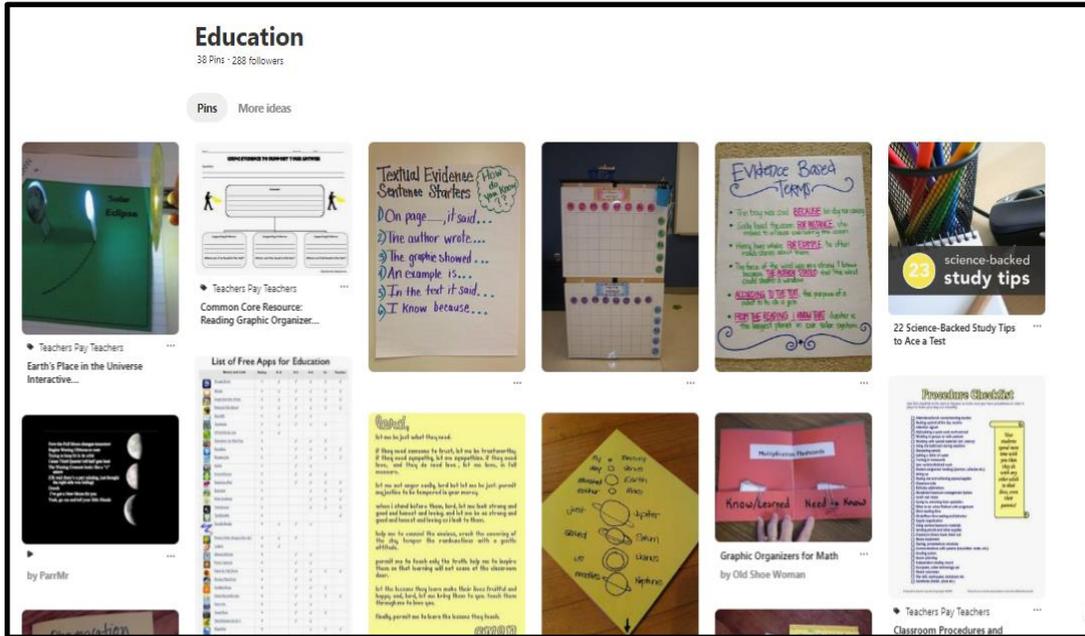
Figure 18. Esmeralda's Education Board on Pinterest

Esmeralda has many different boards on Pinterest on topics including: Classroom

Management, Marzano, Blooms Taxonomy, Depth of Knowledge (DOK) Levels and Positive

Behavior Intervention Systems (PBIS).   Some of her more artistic pins link to artists and

educators in all parts of the world.

Breanna had another key viewpoint on Pinterest and Curation. Here is her story of how

Pinterest has impacted her curation of materials for teaching and instruction.

Breanna's use of Pinterest and Assistive Technologies. So, I have a caseload of

students that I work with and I also work with their classroom teachers. In the

past, I would paste links into an email and send those to the teachers or parents

and it was just really ineffective and hard to navigate. The links were really long

and hard to figure out and you had to cut and paste them every time you wanted to

use them. Many times, the parents or teachers would delete the email or if I

added anything new, I had to resend the email. One day, I just had an epiphany to

use Pinterest. I started small, just making boards for different topics. Then, I

moved to making boards for specific teachers to use and now I actually make

boards for specific students. If I need multiple boards for similar topics, I will

just re-pin the needed items to multiple boards. Like, I currently have [a student]

who is on the autism spectrum so he has a board that is specific to him. When we

work together and I find something that really works well for him, we will agree

to add it to his board. He has really taken ownership of it and will ask me to add

things sometimes. His mom can access it and so can the teachers. She placed a

link on the home screen of his iPad. I also love that it is something that he can use

once he leaves this grade level and goes to the next. I even encourage the parents

to make their own boards and add all of the pins to it, effectively moving it from

my control to their control when they move to the next grade or the next school

(Breanna, personal communication, May 29, 2019)
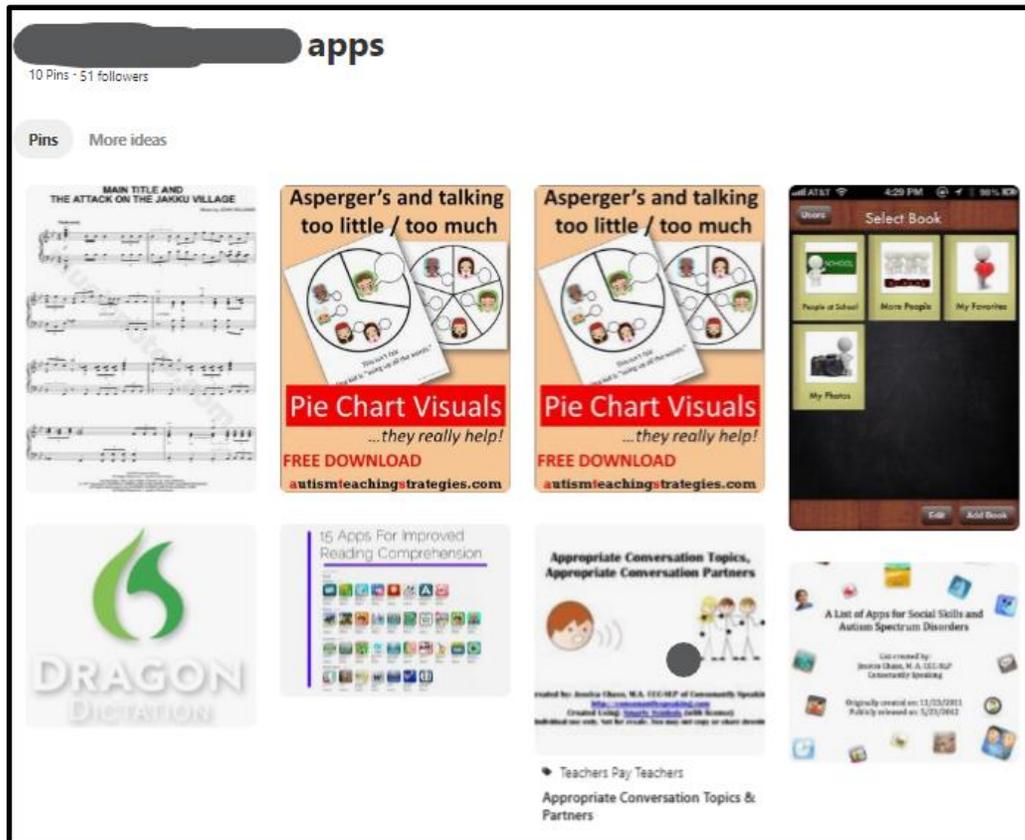
Figure 19. Personalized Pinterest Board for Student

Lesson Delivery. All of the participants conveyed their use of Digital Habitat elements

for lesson delivery. The most popular elements for lesson delivery were Google Classroom and

YouTube. It is important to note here that all of the schools where the participants work use

Google Suite so that may have influenced the ubiquitous use of Google Classroom. If we think

of Google Classroom as a Learning Management System (LMS) this data may be a more

accurate reflection of the general educator population. For Google Classroom, the participants

reported the different ways that they used the LMS which are shown in the graphic below. In

this case, it seems relevant to note the age level of the students which was that common factor in

the data reported by each participant. As the age of the learner increases, the function of the LMS

is also reported to increase. The figure below shows the reported use of a Learning Management

System, Google Classroom, for Lesson Delivery by Digital Native Educators
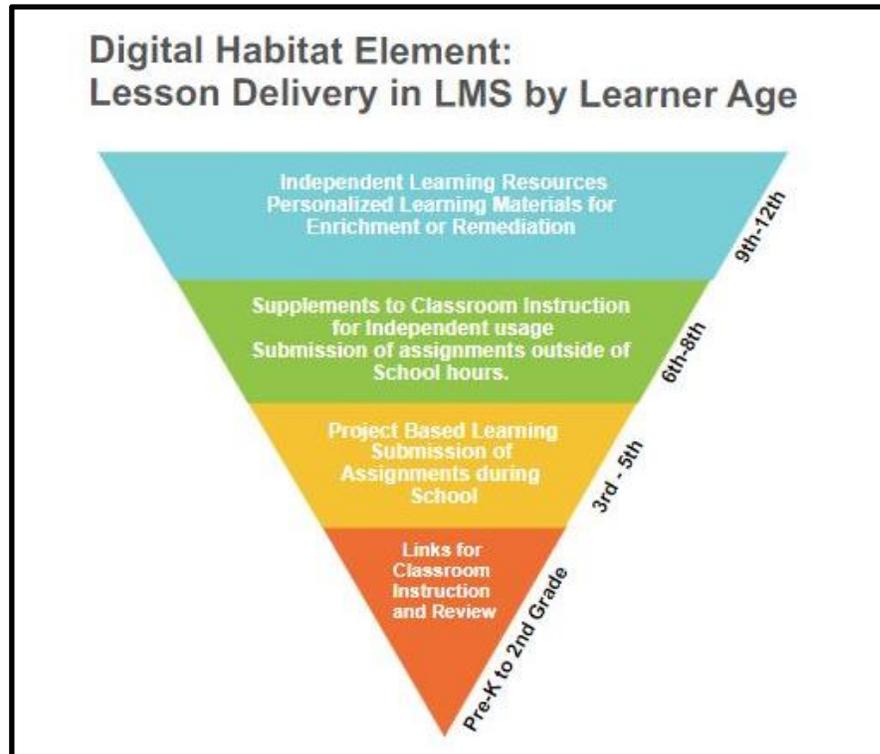
Figure 20. LMS for Lesson Delivery

Digital Native participants also reported the use of several Digital Habitat Elements

which provide pre-packaged instruction. NewsELA, iReady, Edgenuity and USATestPrep were

all utilized by multiple participants. In all cases, these services had been purchased by the

participant's district for their use in classroom instruction. In other cases, such as FlipGrid and

Khan Academy, the resource is open and free for educator usage. EdPuzzle was one element

that three of the six participants are using and tow of the three are paying for the service

personally. Finn states,

I haven't broken down and bought it yet but I know it is coming. It is just too good a

resource and I am running out of space. I don't want to give up any of my resources on

there so I have to make a decision soon. (personal communication, May 28, 2019)

Charlotte is one of the participants that has already bought the EdPuzzle subscription for use in

her instruction. She disclosed, "I bought it last fall. It just makes a huge difference in my content

delivery. I can differentiate for kids and have several lessons all going at the same time without

feeling like I am going to lose my mind." (personal communication May 30, 2019).   Charlotte

explains that at first, she was just using the pre-packaged lessons with YouTube videos or Khan

Academy but she has slowly started to create her own. Charlotte does her lecture notes now but

with three levels of support. Charlotte describes the levels,

I have level 1, which is my student that needs a lot of support and to see many examples.

These videos tend to be longer but they are helpful for students who are absent or who

are just lost. Level 2 is for the average kid who just needs the typical lecture with some

examples and level 3 is for the student who really already knows the material and just

wants to be done so they can move on to the extra credit assignment. I have so many

videos with questions embedded that when students come in for extra help now, it is

another tool I can use for remediation as well. (personal communication, May 30, 2019).

Esmeralda is still in the beginning of usage, having just found the platform in April of 2019.

She says,

I am looking forward to the summer when I can really play with it more. I went ahead

and bought it though because I had saved so much stuff that I ran out of space. I figure I

can always cancel it if I decide it isn't worth it. (personal communication, May 31, 2019)

All of the participants asservated that free or district provided services would be utilized more often; however, they are willing to pay for a platform or element in their Digital Habitat if it provides a niche service or function in their professional practice.

Personalized Learning. For this part of the findings it is vital to distinguish between Personalized Learning and Professional Learning. There is an entire section devoted to Professional Learning which is tied to Research Sub-Question two; however, personalized learning was communicated to be slightly different. The participants conveyed that personalized learning did not always relate to their professional practice and while there can be some overlap, there are Digital Habitat Elements which are inherent to their growth as a human and not inherently related to their profession as an educator. For example, Esmeralda shares her experience with personalized learning, YouTube and Minecraft.

> *Minecrafting as a Mom.* At first, I admit I thought Minecraft was stupid and didn't like that they wanted to spend so much time on the platform. It seemed like a glorified digital version of Legos. Every time I caught one of them on the computer, it seemed to be on Minecraft and they were conversing in this alternative language of switches and lava blocks and creepers. I was lost but not really that concerned about it until they went over to a friend's house and when they came home, they were talking about how the friend's dad was teaching them all how to code and how smart the dad was. I know it makes me seem shallow but I was almost jealous. This guy was teaching my kids something they thought was cool and smart and I didn't know anything about it. I decided right then that I was going to figure it out. So, I went online and got some library books on

Minecraft and had them sent to the local library. I picked them up for myself but

when I got home, the kids were so excited and they immediately grabbed them

and started clicking and flipping pages and building things. After they went to

bed that night, I picked up the book and it was like trying to read The Iliad in

Greek. I had no idea what it was trying to explain and I was frustrated. At school

the next day I casually asked my students, who were also infected with the

Minecraft mania, how they had learned to play and they all agreed that YouTube

was the way to go. I was intrigued. I had used YouTube for class and for fun but

never to learn something myself.

I began by just searching for Minecraft and I selected the filter for the

view count. I was shocked. Not only were there millions of videos and views but

I had no idea where to start. I decided I would pick out something on one of my

computer monitors and I would try to use Minecraft on the other to see if I could

follow along. Within an hour, I felt like I could at least do some basic things in

the platform. I spent the next week working on Minecraft in secret and then when

the weekend came, I revealed to the kids my house I had made. Then, they

promptly showed me how to blow it up. (laughter) Even still, I cemented my spot

as the cool Minecrafting mom and now as they move on to Fortnite and Roblox

and Apex, I have found that I am not as intimidated (Esmeralda, personal

communication, May 31, 2019).

Digital Habitats Elements are being used for this type of personalized learning which can

overlap with professional learning but it is not required. In some cases, it is just an acquisition of

new information which is being used by the participant in their interactions outside of the

education sphere.

Social Networking. For some participants, there is a distinction between social media

and social networking but for others, the lines are blurry and are not always clear.

Social Media vs Social Networking.   Demarco commented, "I think anytime you go

online, it is a social experience. The internet is only possible because people are sharing content

and interacting so the entire thing is really social" (Demarco, personal communication, May 29,

2019). Esmeralda had a different perspective, stating that

> Social media is any interaction that is made for entertainment or to interact with friends;
>
> whereas, networking is more formal and is usually making connections with previously
>
> unknown people that do the same kind of work as you do. (Esmeralda, personal
>
> communication, May 31, 2019)

Finn even more plainly stated, "is there a difference? I thought they were the same thing." (Finn,

personal communication, May 28, 2019). Breanna made an interesting point,

> I think of social media as places where I post pictures of clothes I like or funny memes, I
>
> wouldn't mix that stuff in with my professional stuff when I go to a conference or I am
>
> connecting online with another educator, like on Twitter. (Breanna, personal
>
> communication, May 29, 2019)

Charlotte makes more of a distinction and says it depends upon the service, she explains:

> LinkedIn is more social networking but I wouldn't say that Snapchat is anything but
>
> social media. There are some that overlap but that is where I think you have to be
>
> careful. On Twitter and Facebook, you have to really think about what you are posting. I

lead a really clean life so I am usually ok but sometimes I see people posting things that

make me cringe. (Charlotte, personal communication, May 30, 2019)

Axel explained,

Social media is anything that you push out into the world, like your videos, your pictures

and any self-created materials that you want to display or show off for others. Social

Networking is when you use a common interest to connect with a group of similar

people. Like if I put out a video of my players on Twitter, that is social media. I think

social networking is when you use a hashtag or a common event to connect with people

(Axel, personal communication, May 29, 2019).

Axel went on to explain how he first got into social networking.

Digging deeper- Axel's experience with Social Networking. One of the

first times I ever saw technology used to network was at a conference. As part of

my first year of teaching, my principal sent me to Atlanta for one of those huge

things and we were in the closing speech and they put up a hashtag on the screen.

Out of curiosity I typed it into Twitter and I was shocked. I had been so bored at

the conference. I had just wandered around and went to random sessions and it

was ok but all of the tweets looked amazing. It was like they were at a different

conference than I was. After I got home, it really ate at me. I felt left out. It was

like there was a party going on next door that you could have gone to but you

were just too shy to barge in. So, I vowed that I would learn how to use those

hashtag things and next time I went to a conference I would be one of those cool

kids. I didn't get to go the next year but I found the hashtag and saw a tweet from

this person that called himself "big guy in a bowtie" and I thought that was clever.

He had a link to all his presentations from the conference.

Figure 21. Twitter Artifact

I clicked on those and got some cool new stuff without even going to the

conference. That was when I began to think that networking like this could be

really useful. So, I started looking for hashtags that I could follow. That was the

hard part. I would just type random things in and see what would come up.

Eventually, I found #SMSportsChat and #YPSportsChat which are both good and

have great information for coaching and sports (Axel, personal communication,

May 29, 2019). The figure below shows an excerpt from the #YPSportsChat from

September 3, 2019 on Twitter as referenced by Axel in his interview.

Figure 22. #YPSportsChat Excerpt
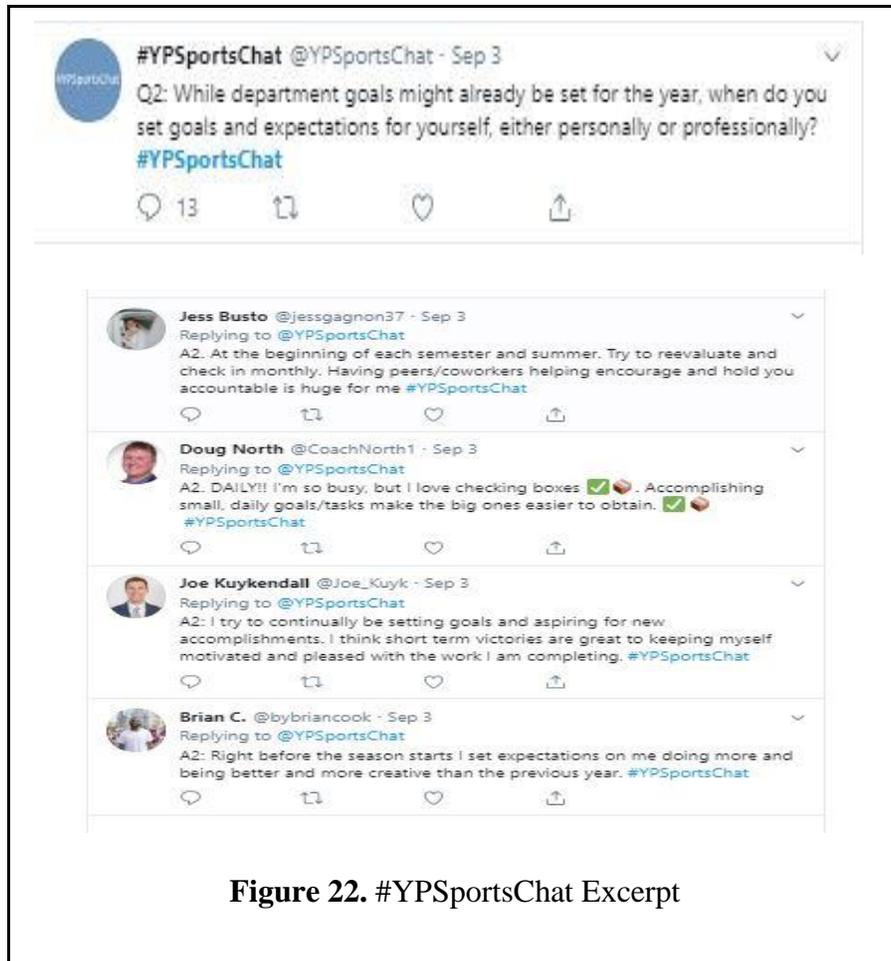
I particularly enjoy live tweeting the college football games and networking with others around those events. Recently I was able to go to the G-Day game and that was fun to follow along while everyone tweeted. (#GDay2019) I find that I will tweet and also network at large events and conferences. One of the first things I do each week is to figure out what hashtag our opponent uses and look that up to get a pulse on their feelings toward the upcoming game. Sometimes it is a good way to get the insight on how their team is doing and what their fans are like.

Social Networking and College Recruitment.   Axel, Demarco, and Finn invited the

researcher to a meeting with the upcoming Junior and Senior athletes. The purpose of the

meeting was to emphasize grades and behavior but also to help the students understand how

much their online accounts can influence their college recruitment potential. The following

vignette is an attempt to illuminate this athlete meeting. These descriptions are based on an

observation (July 24, 2019) as well as Twitter and Instagram archival review during and after the

meeting.

Using Social Networking for self-promotion. Before the school year began, athletes

were invited to a meeting to discuss the college recruitment process. Before the athletes arrived,

the coaches, parents and community leaders participating gathered to set-up snacks and help

organize everything. They placed balloons on the tables and tablecloths and had additional seats

set up facing a projector screen and a podium. The athletes would initially meet as a whole group

to talk about GPA, SAT and ACT requirements and behavior expectations. Then, they would

break into smaller groups led by various leaders to talk about how to best present their talents

online to attract attention from colleges. All of the leaders wrote their names and Twitter and

Instagram handles on their nametags and stood around chatting until the athletes began to arrive.

Demarco and Axel reminisced about how they had carried a DVD when they went on

college visits. One of the older coaches said, "DVD, hell back in my day it was a VHS tape".

Everyone laughed. The discussion turned to Hudl and TikTok and how video is becoming so

much easier to share. Someone commented that TikTok was the new Vine. Finn expressed

concern that they needed to remind the kids that they needed to clean up their profiles. He said

that he had gone on some of them during the summer and seen a lot of profanity and stupid

[stuff] on there. Just as everyone was nodding in agreement a loud group of boys entered the

room. They gravitated to the snacks immediately and began to fill up snack plates with all of the

food that had been donated by the school partners. Finn corralled them over to the registration

table. Of the six boys in this group, four of them already had Twitter accounts and all six of

them had an Instagram account. Only one of the boys had a Facebook account to which one of

the other boys replied, "Dude, that is for old people". Finn explains to them that they can pick a

seat and once the meeting starts, they will need their phones or need to grab a Chromebook out

of the cart. Students continue to arrive and grab food, register and look over the Tri-Boards set

up which detail different colleges, their hashtags, their acceptance rates and requirements and

how many of the school graduates have received scholarships to the school. Several of the

students arrive with parents. While the meeting is designed for Athletes who are upcoming

Juniors and Seniors, Demarco comments that there are a lot of middle school players here. Axel

reminds him that a lot of them have older brothers and probably are just along for the ride.

Discussion erupts about what age the athletes should start focusing on setting up accounts and

posting highlight videos. Finn says it depends. He knows kids who are committed now and

were being recruited at 14 and 15.

The organizer of the event welcomes everyone and thanks the sponsors. Each of the

leaders take a few minutes to stress different aspects of the process of using social networking

and social media for self-promotion and college recruitment.

The first topics that are covered are GPA, SAT and ACT and behavior. Athletes are

given information on how to look-up their GPA and test dates and registration information for

the SAT and ACT. Behavior and attendance are also mentioned and emphasized. The leader of

the event explains that coaches have too many athletes to choose from now to pick one that

might end up in the police blotter. Athletes are making eye contact with each other and parents

are nodding.

Demarco assumes the podium and gets the job of reminding parents and athletes in

attendance that colleges are going to look at your username. He uses Jake Fromm, the current

UGA Quarterback, as an example. Fromm's Twitter username is @FrommJake and his name on

Twitter is "JakefromStateFromm". On the screen behind him is a screenshot of Fromm's profile

page.

Figure 23. Twitter Profile Example

He then switches to a few different profiles which elicit huge laughs from the group. The

entire room erupts at @hoosier_daddy, @butt_smasher, and @google_was_my_idea. Demarco

uses these to illustrate that while a little levity, like Fromm, is ok, you don't want to come off too

silly or inappropriate. He goes on to share the athletes from the previous season's profiles who

are currently playing college ball. Almost all of their profiles consist of some version of their

last name, graduation year and their jersey number. The profiles also consist of several key

pieces of information, such as a link to highlight videos, like their Hudl or Perfect Game profile,

their weight lifting stats, their 40-yard dash times or their fastball pitching speed.
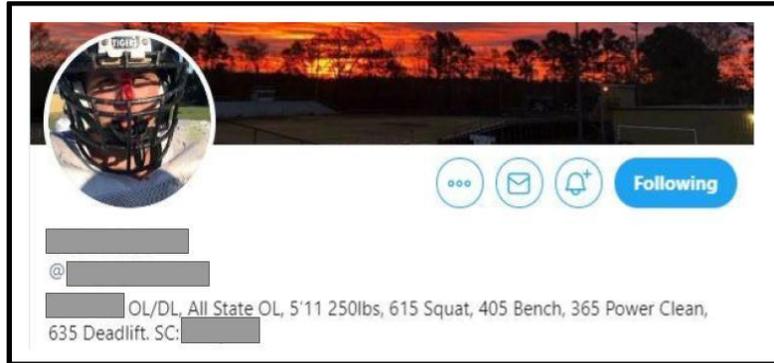
Figure 24. Twitter Profile Example

Finn is responsible for talking about the difference between a personal post and a professional post. He talks about how athletes should use their Twitter or Instagram profile like a resume. He suggests that they get two different profiles if they cannot maintain a clean profile. On the screen behind him, he reveals that the profile displayed is for someone currently in the room. The profile has some retweets on it that Finn points out. He asks the audience to imagine that they are hiring for a job. Would you hire this person if you know nothing else about them? A murmur and side conversations spill out into the room. He then reveals that this was his profile 5 years ago. Everyone laughs. He concludes with a warning that the "past can come back to haunt you, so be careful what you post". He turns the microphone back to the organizer who explains that they athletes can now go to the various leaders who will look over their profile with them, provide advice and help them. Before they break, he asks if there are any questions. A hand goes up in the back and one of the parents stands. He asks if they have advice on hashtags?

One of the leaders of the event steps forward and says that the team actually selects a hashtag each year to represent them for the season. It is selected by the seniors. The room is

reminded that there is also a system wide hashtag. The dad nods but goes on to clarify that he

was asking if each athlete needs a hashtag. A murmur goes through the group as everyone

begins to discuss. Finn breaks in and says that it is not required but it does help for finding

information online. Demarco reminds everyone that if you do decide to have one, just make sure

it is not inappropriate.

The group breaks into small pieces and students begin to wander over to the different

leaders. Leaders are pulling up profiles on their phones or laptops, talking to parents and

advising the athletes on things they should keep and delete. They also talk about retweeting and

advise to stay clear of highly political or inflammatory posts. One of the leaders says,

> We think it is great that you guys have opinions on politics or the second amendment but
>
> we just want to make sure that it doesn't hinder your ability to get a scholarship. You
>
> never know what opinion a recruiter may have so just be careful.

  The dad promptly says- "Son, she means that you need to delete that picture of Trump holding

an assault rifle".

11:26 PM · Aug 31, 2019 · Twitter for iPhone

1 Retweet   3 Likes

Figure 25. Twitter Artifact

The teenager comments that he just thought it was funny and didn't even think they would look at stuff like that. The conversation comes up about the local college player that was dismissed from the baseball team and lost his scholarship because of a comment made at the football game toward a player of a different race. The dad says, "it is time to grow up and watch what you post and say when it might be costing us thousands of dollars in scholarship money".

These types of conversations are being held throughout the event. Students are asking questions about profanity. Free speech and the first amendment are mentioned more than a few times as teenagers are expressing their feelings towards their profiles being scrutinized. Athletes are cleaning up their profiles or creating a new profile with a more appropriate username. Leaders are showing the students who are new to Twitter how to locate the colleges they are interested in and follow them. There is a lot of discussion about the best way to post highlight

videos and how long they should be. A lot of conversations spill over into the parking lot as the

event begins to break up and finishes. All of the leaders clean up while talking about the

pressure on teenagers today- how public all of their lives are as they navigate through the ups

and downs of high school. They joke about how they are glad that they don't have video from

all the dumb things they did in high school.   They also discuss how they worry that kids are

trying to maintain an online presence that is hard to live up to in real life.

Identity in a Digital Habitat

Online vs Offline Identities. One of the concepts which seemed to universally resonate

with all the participants was the need to be "real and an honest version of yourself online but also

remember that it is public" (Finn, personal communication, May 28, 2019). Breanna was the

more conservative and hesitant of the participants, stating:

> I make an attempt to be myself but the best version of myself. I mean, I am measured in
>
> how I post and interact because I know that it reflects on my family and it is public in a
>
> lot of ways so I'm not going to be cussing or drinking or any of that stuff. I also try not
>
> to like or share anything controversial or political. I really keep things as generic and
>
> clean as possible. (Breanna, personal communication, May 29, 2019)

Axel does admit,

> I had to clean up some of my stuff when I got the job coaching. There used to be pictures
>
> of me holding a beer and I think there was one of me shooting a bird on there. I had also
>
> shared memes with [profanity] and I deleted those. I think everyone does that though.
>
> You put up stupid [things] when you are younger and then regret it and delete it. I think

that is why Snapchat is popular. It is like the trash takes itself out. (Axel, personal

communication, May 29, 2019).

One of the challenges that all of the participants faced is the concern over having students and

parents interact with you online. Finn says,

It is a small community and it is hard. I have a kid right now that I go to church with...

he messes up and calls me by my first name all the time. I am friends with [the family]

on Facebook and I've been to their house and drank during a [football] game before.

Sometimes it is hard to keep everything separate. (Finn, personal communication, May

28, 2019).

Demarco was more finite with his habitat access saying,

I don't let students on there. No way. I have seen how quickly they will get into all your

personal business. Maybe it is because I am not much older than them but I think it is a

good thing that I am not from around here. That way, I didn't have to make excuses for

not being friends with all the kids and their parents. I need a break from all of that when

I go onto Insta[gram] or Snap[chat]. The last thing I need to be seeing is all of their

craziness splashed all over my page. Sometimes it is better just not to know what they

are up to on the weekends. (Demarco, personal communication, May 28, 2019).

Charlotte had a different take and said, "I think it is ok to intermingle them if you are a very

transparent person. I think that some people are just more selective in what they want to share

and that is ok." (personal communication, May 30, 2019). She goes on to elaborate that now that

she has found herself divorced; she can see how opening up your life to everyone can cause a

large amount of stress. Charlotte shares, "Honestly, I think about how celebrities must feel. I'm

really particular about what pictures I post and what I put out there about myself. I can't imagine

not having control over that" (Charlotte, personal communication, May 30, 2019). Breanna

doesn't have Facebook at all and only uses Twitter for professional reasons. She has Instagram

but goes by her first and middle name which makes it hard for parents to find her online. She

has Snapchat but says it is a point of contention between her and her husband who is not a fan of

Snapchat. One of the interesting things she mentioned was how her husband's job and his

preferences influences her online presence. Breanna explains that her husband works for an

international company which creates and manages software. He is constantly dealing with

security breaches and one of the common concerns is that people use the same password for all

of their accounts. He is really adamant that they use Last Pass and keep their passwords on a

schedule where they change them. He is also really sensitive about her posting any pictures of

the kids online. Breanna says, "it is hard and it drives my mom and [his mom] crazy that we

don't want them to put pictures of the kids on Facebook or Instagram." (Breanna, personal

communication, July 23, 2019). Breanna also explains that this makes her Twitter and Instagram

accounts even more about her teaching and her classroom. She explains,

> Well when you can't share pictures of the kids and anything really personal, there isn't
>
> much left but work and food. So I share a lot of things on Instagram related to my
>
> classroom and students. So in some ways, I am even more involved in networking online
>
> than I am in person because my social media presence is so much about my experiences
>
> at school. (Breanna, personal communication, July 23, 2019).

While digging into the digital archives of the participants Digital Habitats, it became

evident there is significant intermingling of personal and professional information. All of the

participants, except Breanna, showed the almost simultaneous posting of personal anecdotes and professional information. In the image below, the following Instagram posts are all from the same participant on the same account. There were many examples in the Digital Habitat. These were selected since no faces are visible and the hashtags and username has been redacted for privacy reasons. The example shows how one account contains personal information about family life, a religious post, a post of a student reading in the library and a trip to the dentist. The post of the reading student also includes the hashtag that this participant uses for the class and the post of the farm includes the family hashtag that is used on all Digital Habitat posts.
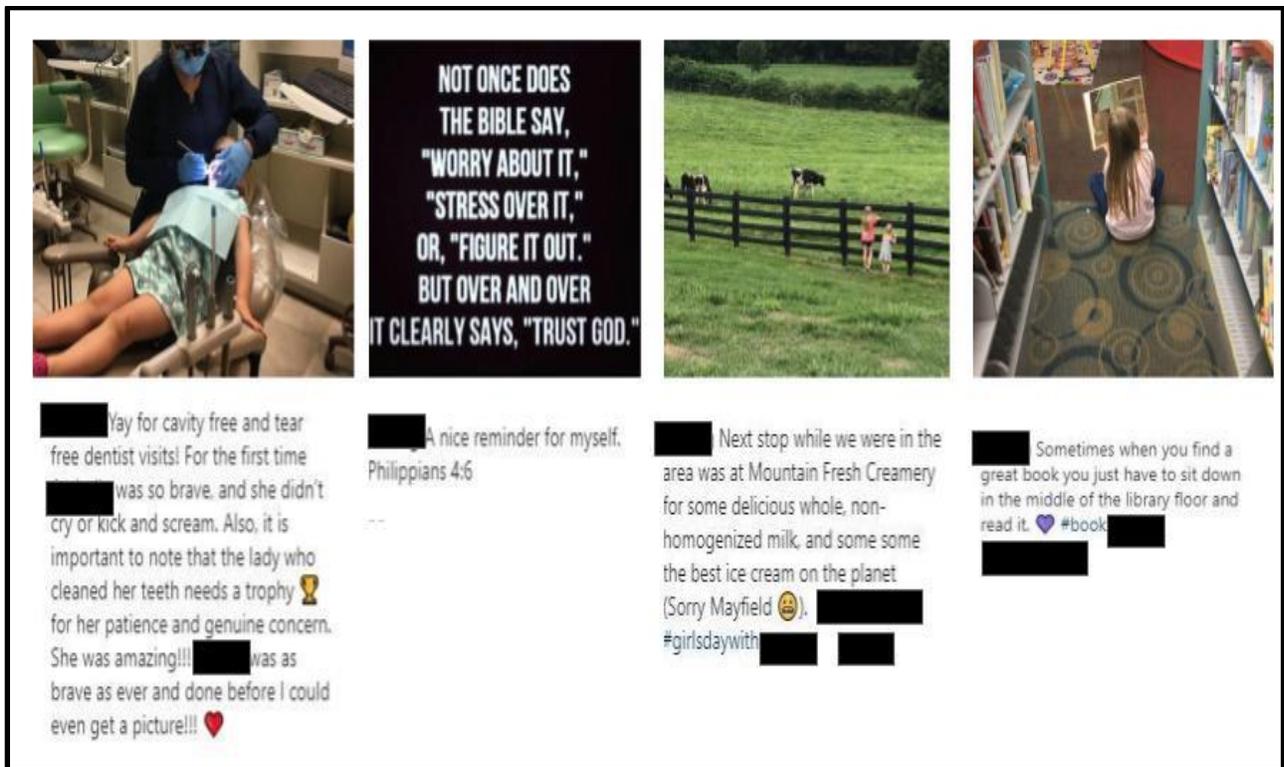

Figure 26. Instagram Artifacts

Charlotte sums up by saying,

> I guess you have to understand that when you become a teacher it is a 24 / 7 thing. With
> some professions, you can just leave work at work but when you are a teacher, you accept
> that you are a role model for students all the time. The easiest thing to do is just to live a
> clean life so you can be open and transparent all the time but not everyone can do that.
> You just have to be careful. Our jobs carry more responsibility. I definitely see the new
> teachers, especially the young females, struggling with that. (personal communication,
> July23, 2019).

All of the participants expressed that they have had concerns about their online versus offline identities and how to balance authentic interactions with privacy.

Language Registers and Code Switching. During the focus group one of the topics discussed was language registers and code-switching. When asked if they found themselves changing language registers or code-switching, all of the participants admitted that they were unsure what that meant. For clarification, they were provided a table of Joos (1961) 5 registers to look at during the discussion. The researcher gave some examples and opened the discussion around the informal way kids text and communicate. The discussion began with how that informality transfers into their writing or their classroom tasks. Esmeralda says,

> I am surprised by how kids talk to me sometimes. I guess I would never have spoken to
> an adult like that when I was in school. Sometimes I wonder if it is parenting has
> changed or maybe it is this idea of language. It seems like most students now only have
> one way they talk and they use that for everyone and everything. (focus group, August
> 10, 2019).

Table 12

The 5 Language Registers and Examples

Register	Definition	Examples
Frozen	Language that never changes	Traditional Wedding vows, Miranda Rights, Bill of Rights.
Formal	Standard English Contractions are uncommon Abbreviations and Acronyms are explained or not used.	Speeches, Essays, Business Letters
Consultative	Less formal than standard English Contractions are common	News, Patient to Doctor, Student to Teacher
Casual	Language between friends Abbreviations and Acronyms are common	Loose sentence structure Vernacular speech Slang, regional and cultural
Intimate	Language between spouses or other close family members	Pet names Inside jokes

Demarco revealed that he also sees students struggle with the differences between social language and academic language. "They just write the way they talk. Like when they write essays, it is just in that texting type language. In fact, sometimes they will even use abbreviations like they are actually texting." (Demarco, focus group, August 10, 2019). The

participants who are instructors at the elementary levels were very interested in this and Brenna

said, "that is crazy. We don't see that here. I guess because they don't have phones yet" (focus

group, August 10, 2019). The conversation then shifted to how we can help train students to use

a more consultative or formal register when needed. Charlotte said,

> I think we really have to model it. I admit that I am not always great about it either. Like
>
> when I write comments on their papers, I will write it really fast and choppy and
>
> informal. I don't always communicate with them in the same level that I expect them to
>
> communicate with me. (focus group, August 10, 2019).

Charlotte continues, "I actually find myself doing that a lot. How I talk and interact with my

Seniors is actually very different from Freshman. I am more casual and relaxed with the Seniors,

maybe even intimate." (Charlotte, focus group, August 10, 2019). Charlotte is studying and

pointing at the table as she talks. She admits that it "sounds weird but by the time they are

seniors, I may have taught them for several courses and I will have pet names for some and we

will have inside jokes." (Charlotte, focus group, August 10, 2019). Charlotte also says that she

becomes more formal when we have visitors or someone is observing her versus her normal

everyday interactions which probably fall in Consultative or Casual. When pressed further about

online interactions in the second interview, she said, "It really does depend on what I am doing

online. It is interesting. Like if I am wishing a family member Happy Birthday, I will use a

more casual tone but if I am sending out a text on Remind, I would say it is higher, maybe

consultative" (Charlotte, personal communication, July 23, 2019). Demarco said that he does

switch codes if he gets nervous. He explains,

We have these Parent Conferences and Open House events and I will get dressed up and

be more formal but that isn't the normal me. Most of the time I am really casual with

everyone, especially online. Online, I might not even go above casual, I think I am about

the same all the time. I'm usually pretty chill. (Demarco, focus group, August 10, 2019).

Finn admitted that he never thinks about it but "probably should watch that. I'm young and I

forget sometimes with how I interact with the students and parents" (Finn, focus group, August

10, 2019). One of the female participants shared about Finn, saying

Recently [Finn] posted a comment on [a celebrity's] Instagram and it was entirely

appropriate as a single man but I don't think he realized that students and parents were

going to be able to see it. They have had a good time really joking around with him

about it" (Charlotte, focus group, August 10, 2019).

Esmerelda shared about a similar experience where she shared a picture of her family from the

beach and she was in a swimsuit. The photo just happened to show her tattoo. She says,

 I am not friends with any students but I am friends with parents and one of the boys saw

it on his mom's Facebook. I didn't realize how vulnerable it would make me. He made

some comments about my tattoo the first few days of school. (wince) Since then, I have

been more careful. I even went on my Pinterest and made my Tattoo board private. I

have found myself setting firm boundaries with him in class because it was like he was

pushing to have a more informal relationship with me but I also try not to be fake.

(Esmeralda, focus group, August 10, 2019).

 Charlotte explains that she thinks it is getting more difficult because private time isn't really

private anymore. She clarifies that when she first started teaching, she thinks everyone was more

formal with students and parents but now with everything being so public online, it is hard to maintain that level of formality all the time. Charlotte says, "It is exhausting to try and keep up two different versions of myself so I guess I relax. Maybe that is bad. I don't know" (Charlotte, focus group, August 10, 2019). The discussion of how the levels of language formality was different online gave Axel the opportunity to reveal that when he is online, he is "just more relaxed in general and I guess that does go for language I use as well" (Axel, focus group, August 10, 2019). All of the participants agreed that language registers and code-switching is changing with the constant interactions online and the interaction of personal and professional spaces.

Interestingly, during the observations, code-switching and registers were more holistic to the person and not really a function of the situation as the participant's report. For example, Axel operated in casual register the entire observation (Axel, Observation, July 24, 2019). He frequently uses slang with the students and other faculty members and is very relaxed in his communication tone and word choice. At one point he said to a student "Dog, you got me. I mean it. You gotta bear down man and step up." (Axel, Observation, July 24, 2019). In contrast, Breanna operated in standard English during her observation. I counted no contractions in her speech and she was very deliberate in her body language, formality of her speech and even her posture was more formal. This led me to wonder if language registers and code-switching could be linked to some other demographic other than age. The observations also introduced a new variable, the researcher, so it is possible that the language register of the participant became elevated just from being observed. As mentioned by Charlotte, she said that she is always more formal when being observed.

Accessing a Digital Habitat

Mobile Computer-Supported Collaborative Learning (mCSCL). Mobile devices, specifically smartphones, were reported by the participants to be the primary mode of digital traveling and habitat access. All of the participants reported that the use their cell phones for checking email and social media, messaging, viewing documents and even shopping. All of the participants have school-issued laptops, which they use for taking attendance, putting in grades, and creating documents; however, they stated that they rarely use their laptops for any social media or social networking. Esmeralda admitted,

> I didn't even know that you could go to Twitter on a computer until recently. I figured it
>
> was like Instagram or Snapchat. [A veteran teacher] was complaining that it was blocked
>
> at school and we figured out that she was trying to go to it on her laptop. We all use the
>
> app so we had no idea that the website was getting blocked by the filter. We had to show
>
> her how to download the app. (Esmeralda, personal communication, May 31, 2019).

 Charlotte says, "I was at a baseball game and I did an entire [conference] presenter application on my phone while I watched the game". (Charlotte, personal communication, July 23, 2019). Axel comments that he used to rely on his laptop for making assignments and then it kept losing charge all the time and in desperation, he made a Google document on his phone. Now, he explains that he knows he can do that if he needs to so it takes the pressure off from even needing the laptop anymore. (Axel, personal communication, May 29, 2019). Demarco says that he does like watching videos on a bigger screen but just uses the Apple TV for that and mirrors his phone to the TV (personal communication, May 2019). Breanna communicates with everyone using her smartphone. She describes a recent experience when one of her children hid

her phone. She keeps all of her phone contacts and accounts saved in her phone. Breanna says,

"The only thing I could really do with my laptop was email. Thankfully, I could remember some

phone numbers but I had to send my principal an email that I was without my phone" (Breanna,

personal communication, July 23, 2019). Axel asked if it was "even possible to do Voxer or

Instagram on a laptop?" (Axel, personal communication, July 22, 2019). Esmeralda commented,

> I like that an expert is always a tweet or a text away on my phone. I use that all the time.
>
> In fact, sometimes I can get an answer quicker using Twitter for a classroom concern.
>
> My mentor teacher is just down the hall but we don't have the same planning and it
>
> makes it hard to ask questions in person so I will reach out and collaborate with people
>
> online. (Esmeralda, personal communication, May 31, 2019).

Charlotte says that she prefers her phone because she doesn't like using a mouse or a touchpad

and would rather scroll on her phone. Axel agrees, he says that he is "never without my phone...

[and gets] annoyed with using a laptop or a computer now. I guess I have just gotten used to the

phone". (Axel, personal communication, May 30, 2019). Mobile devices were the preferred

communication and collaboration device for all six of the participants.

Learning and Developing as a Digital Native Educator in a Digital Habitat.

Professional learning networks (PLN). All of the participants find professional learning

networks useful and gave several key ways that PLNs have been important in their journeys in

education. For Demarco and Finn, coaching is a huge part of their career in education and is the

focus for most of their PLN interactions; whereas, Charlotte and Breanna are more focused on

instructional technologies and classroom resources. Esmeralda and Axel have the more varied

and extensive PLN experiences, participating in multiple PLNs for different purposes.

Selection of digital PLNs. All of the participants have used Twitter and Instagram as

part of their Digital Habitat for professional learning. Facebook and Pinterest are used by 50%

of the participants and Linked in is used by four of the six participants, although it was seen as

more of a connection tool and not a source of learning. Breanna states, "Linked in is really just a

place for people to look for jobs or post about promotions. I haven't ever learned anything on

there. It is more like a Digital Resume" (personal communication, July 23, 2019). The

following sections will focus on the use of PLNs by the participants and their experience with

these interactions and perceived professional growth outcomes.

Twitter PLN's for Educators. Axel and Esmeralda both find #EdChat on Twitter to be a

valuable chat to either participate in live or to go back and review later. Axel says,

> I used to think #EdChat was the best but I am finding that there are other smaller chats
>
> that I can get more out of now. It isn't that #EdChat isn't good, it has just gotten so big
>
> and some people are using it to promote their companies and products now so it is harder
>
> to sift through. I still have a reminder for it on my phone though and I will check it out if
>
> I can. (Axel, personal communication, July 22, 2019)

Esmeralda was much more in depth in her description and discussion of #EdChat.

> *Esmeralda and #EdChat*.   The first time I heard about #EdChat was at a
>
> conference. I was already on Twitter but I wasn't really using it for teaching. I
>
> liked it but it was just another social media site that I would play on. I was at this
>
> conference and I kept hearing about digital PLNs. We were doing data teams at

the school and I thought they were talking about a digital way to report the data,

like using Google Sheets or Excel or something. In fact, I almost walked out of

the session at the beginning when they started talking about Twitter but it was in

one of the smaller rooms and there wasn't an easy way to sneak out that wasn't

going to look super rude so I stayed. I thought it was going to be useless. During

the session, the presenter showed how to find Twitter chats and hashtags using a

service, I can't remember the name because it has been too long, but you could

find out when Twitter chats were happening.   (During the second interview, the

participant confirmed that it was Tweet Reports www.tweetreports.com to which

she was referring) I was interested and thought it sounded cool. The thing that

hooked me was when she said that you could just stalk the chat and that you

didn't have to participate. I really like that aspect of it. I don't really post often,

even now that I know what I am doing, but I stalk it all the time. I find myself

looking at it later too when I am looking back for something. I figured out how to

use the advanced search on Twitter so that is helpful. Just recently, I had a really

bad day at school. The kids were just really off task. It is the end of the year and

everyone is just over it. On a whim I went on Twitter and hit up #EdChat and

found a Tweet by Stephen Anderson. It was about how change is a process. I

feel like I am a pretty good teacher and I was putting too much pressure on myself

to never have a bad day. It helped me remember that I am always getting better

and even bad days help me get better.
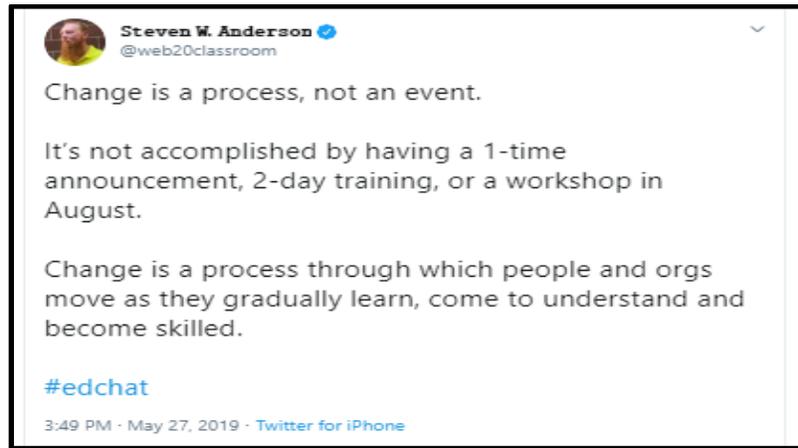
Figure 27. Twitter Artifact

 I also like how they will ask what you want the chat to be about. They will put

up a poll and let people vote so that you have some input in the topic. That makes

people more interested and excited, I think. Other chats will publish a list of

topics and I will put reminders in my phone so I don't forget the ones that I want

to see. If the topic isn't interesting to me, I might check it out later but I won't

make it a priority. So, the topics do matter. After a while, you will see

redundancy and you can get saturated with certain topics. Like, I am so over

talking about the effectiveness or ineffectiveness of homework. I just don't care

so if I see the chat is about homework, I will just skip it. There are also topics

that I am not interested in just because our school is not experiencing that issue or

doesn't fall within the topic. Like, if the chat is on grading, I'm not interested.

Recently, there was a chat on grading but it doesn't apply to me because our

district has really strict control over grading. So, I am not going to waste my time

on something that doesn't really apply to me. The poll idea is good though

because you get input in the topic and if I am not interested, no big deal.
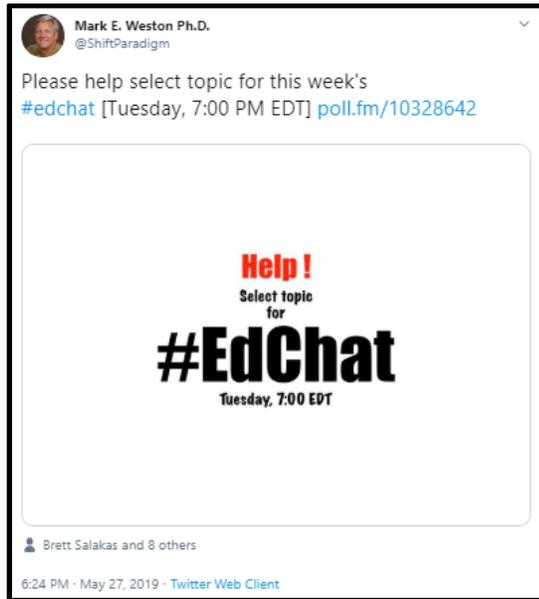
Figure 28. #EdChat Poll
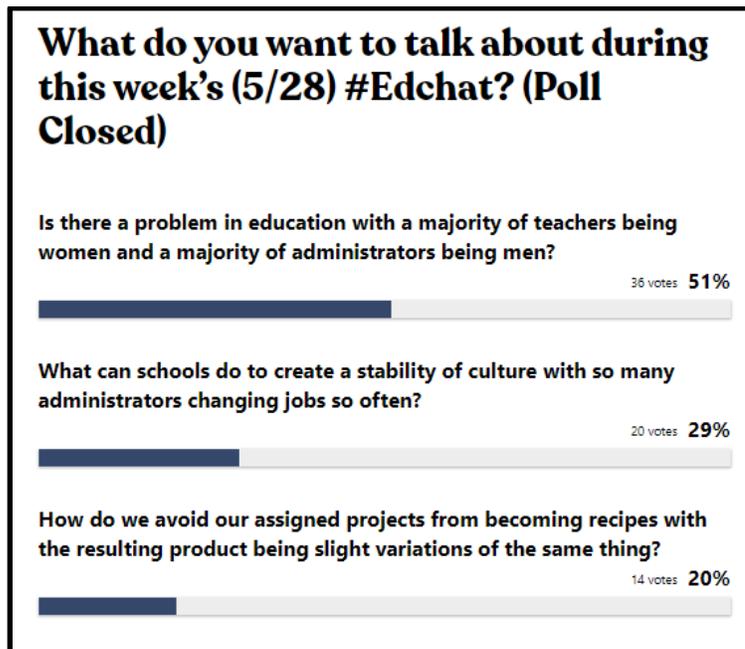
Figure 29. #EdChat Topic Selection Poll

Another thing that I have noticed which can be good but also annoying is that

other educators and businesses have found #EdChat and they will use it to

promote their chats or try to sell things. That can get annoying and sometimes I

roll my eyes as I scroll past that stuff now. Every now and then though, I find

something good. Like on the chat recently, someone posted that another chat was

happening immediately after #EdChat called #MakeItReal. Normally, I wouldn't

search up new chats now because I have so many, I already like but because it

was the end of the year and I was bored, I stalked it and it was good. So, I guess

in some ways it is good that #EdChat is a place for people to promote their stuff

but I have to be in the right mood before I will interact with those kinds of posts.
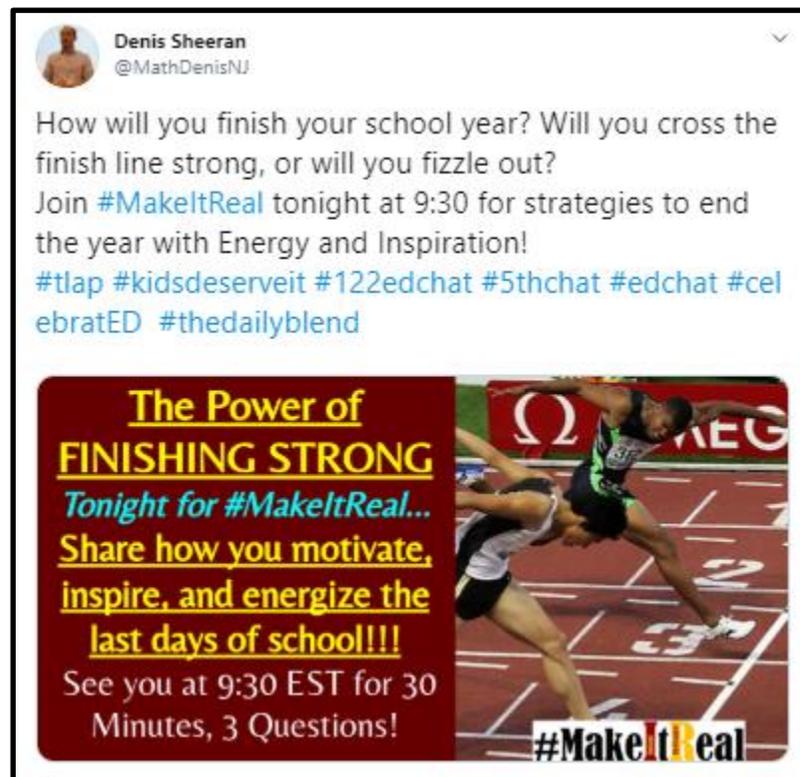
Figure 30. #MakeItReal Twitter Artifact

So, based off that one Tweet invite, I stalked #MakeItReal and found some cool

stuff. The question was about how to finish the year strong. We had already

finished at that point but I thought one of the ideas was really cool and used it to

develop an activity for the beginning of the school year so I got some good stuff.

Not all the chats I visit are useful but I make a note of the ones that I get good

stuff so I can go back and find them again. (Esmeralda, personal communication,

May 31, 2019).

Twitter chats that participants found useful. Each of the participants contributed their

thoughts about Twitter chats and hashtags and provided a list of the hashtags that they used

frequently or have used. The table below shows the hashtags used by multiple participants in the

study. All of the hashtags are used on Twitter exclusively, except for #TeachersofInstagram

which was mentioned by three of the participants and is used on Instagram. Descriptions were

adopted from Tweet Reports. (www.tweetreports.com)

Table 13

Twitter Hashtags in Education utilized by Digital Native Participants as part of their PLN.

Hashtag	Description	Participant Usage
#EdChat	Weekly chat for educators to discuss and learn about current teaching trends.	All participants, except Finn.
#GaETC (17, 18, 19, etc)	Hashtag for the Georgia Educational Technology Conference. The year is added to track each conference contributions.	Axel, Breanna, Charlotte and Esmeralda

#creatED	A chat for out-of-the-box educators to share their most creative ideas for engagement, lesson plans and technology.	Breanna, Charlotte, Esmeralda
#TechTalkGA	Designed for Georgia educators interested in educational technology.	Esmeralda, Finn
#gtchat	Educational chat which covers gifted and talented topics for both educators and parents.	Breanna, Charlotte, Demarco
#satchat	Weekly chat for current and emerging school leaders.	Axel, Esmeralda
#tlap	Chat which embraces the Teach Like a Pirate philosophy to collaborate on creative lesson designs that engage students and make school fun.	Axel, Charlotte, Esmeralda
#SportChirpChat	Targeted chat for athletes, parents and coaches. Chat revolves around experiences with athletics.	Axel, Demarco
#YPSportsChat	A chat for young professionals working in the sports industry.	Axel, Demarco, Finn

In addition to the hashtags in the table, the following hashtags were reported as being

used by one of the participants and illustrate the variety of hashtags that can be utilized.

Participants were asked what made the hashtag interesting or useful and the table shows these

responses. To protect the participant's anonymity, hashtags which are specific to a district or

person were excluded from the list; however, it should be noted that all six participants use the

district hashtag and three have participated in chats which are specific to a certain district, even if

they were not teaching in that district. Two of the participant's report having a personal hashtag

that they use on their posts.

Table 14

Twitter Hashtags and their Usefulness to Digital Natives in their Digital Habitat as Educators

Hashtag	Description	Participant Usage
#BeAuthentic	Learn and explore from expert storytellers.	Axel
#edtechchat	General education and technology discussion	Esmeralda
#5thchat	A weekly chat for fifth grade teachers in particular but all educators are welcome.	Esmeralda
#LDchat	Education and Parenting children with learning and attention issues like dyslexia and ADHD. Each week a new co-host joins the discussion.	Breanna, Demarco
#MakeItReal	Chat focuses on increasing relevance of content for students.	Esmeralda
#SMSportsChat	Sports topics: Football, Baseball, Basketball, Soccer, etc.	Axel
#SportsTechChat	Using technology to enhance the fan experience.	Axel
#teacherbookclub	Educators discuss a professional development reading with a guest author.	Breanna

| #teacherhorrorstories | BuzzFeed sponsored hashtag to collect comical teacher stories | Finn |
| #teacherPD | Weekly chat focused on developing teachers in the latest topics in education. | Charlotte |

Professional development.   During the interview process, the participants focused more on Professional Learning experiences. During the focus group, the topic of Professional Development was introduced for discussion. Esmeralda got the conversations going with her comment that the "Marzano training was brutal". Finn agreed, "It was twice as bad because it was during pre-planning when we had tons of [stuff] to do in our rooms and instead we are sitting in the auditorium for like 8 hours listening to some chick tell us how to teach". Charlotte added,

> what is more hilarious and ironic to me is that they deliver those trainings telling you one thing but they don't model it. Everything in Marzano says that those big group, sit and get, trainings are ineffective but that is what we get.

> Demarco joked that he was going to "go get one of those jobs. I could travel around the country and shoot off [crap] all day. I bet they get paid good too." Breanna added that she didn't mind the bigger trainings but spends a lot of time on her laptop doing other things so she is only partly listening. She said,

> I sit in the back with my laptop and just work on paperwork and things I need to get done. So really, it is a solid 8 hours of work for me. As long as you don't draw attention to

yourself, you can really blend into the background in those things so I just make sure I take work with me.

Axel admits that he went to the restroom at some point about an hour in and never went back. He says, "I just went to [a classroom] and did some work. It isn't like anyone knows you are there or not and I get nothing out of those things". Charlotte added that she normally just takes papers to grade but since it was during pre-planning, she didn't have any. She shares that she was doing good until the topic came up about not uninviting students. Demarco was not in attendance at this particular training, so he asked for more information. Esmeralda expanded,

> So, she was trying to make a point about not making kids feel unwelcome or something but it backfired and even the principals stood up and got involved. She was pretty smart and just moved on because she knew she hit a nerve, I guess. She felt the mood in the room shift.

Charlotte adds, "She showed a picture of a door and it had a sign that read: "No Students Allowed" or something and she was talking about how evil that was and blah blah blah." Axel, who had skipped out, is on his phone during the focus group and it becomes apparent that he has googled what we are discussing and he adds, "Well this actually doesn't look untrue but it sounds like it was taken wrong. Maybe she just presented it bad". He shows the table on his phone and since everyone can't see it, he reads it out.

Inviting	Disinviting
• Talking about the weekend at the start of class on Monday • Students being able to select partners for some assignments • The teacher bringing in treats as a surprise • The teacher asking students what they thought about a unit and ways it could be improved	• The teacher chewing gum while students can't • Students not being allowed into the classroom until the first bell rings • The teacher taking a long time to give feedback on assignments to students • Not having decorations in the classroom

Figure 31. Marzano Inviting vs Disinviting Elements

Esmeralda says to Axel, "maybe you should do the PD next time" and everyone laughs. With this, the conversation turns with Charlotte saying, "So I am totally on board with that. Like last year when admin did those PD sessions each month and you got to choose which 3 you wanted to go to". Several of the other teachers agreed and then Breanna questions, "what are ya'll talking about? We don't have anything like that". Finn explains that the administration asked for volunteers from the faculty to present on a list of topics. Teachers volunteered and were the presenters. Charlotte adds that there were sessions on Learning Targets and Lesson Plans and Google Classroom and that they got to choose which one to attend. All of the participants agree that they enjoyed having the presenters be faculty members instead of a hired expert from a company. Charlotte adds that being able to go to the presenter of the session later when she has questions actually helped her. She shares,

> Now, I actually use some of the stuff that we went over. Usually I just go to those things
>
> and then never look at it again but knowing that I had someone in the building that I
>
> already knew who could help, I felt like I could actually try so now I feel comfortable
>
> with Google Classroom and that is how I found EdPuzzle and learned how to use

NewsELA. Actually, I need to go to one on Edgenuity. I still don't know how that thing

works.

All of the participants agreed that they preferred choice and flexibility in their

professional learning to make it more engaging and get them to use the information in their

classrooms.

Adopting from a Digital Habitat for Utilization

This section provides the participants revelations of how they are transferring information

from their Digital Habitats to their instructional practices. It begins with selection, moves to

storage and then provides information shared about the process of adopting a digitally-acquired

item into curriculum.

Selection of instructional materials. All of the participants reported that they selected

instructional materials from online sources and volunteered a lesson plan example. The table

below indicates the sites that were reported for lesson origins and also shows which sites the

same participants actually cited on their lesson plans as being sources.

Table 15

Comparison of Interview and Documentation regarding Lesson Plans

Participant	Lesson Plans from Digital Habitats-Interview	Documentation of Digital Habitats on provided Lesson Plan Documents
Axel	Google, Twitter, Holt	None
Breanna	Pinterest, Edutopia, Teachers Pay	None

	Teachers, Google	
Charlotte	Pinterest, NSTA, GSTA, Facebook, PHET, NASA, EdPuzzle	PHET, EdPuzzle
Demarco	Discovery, Pearson, Google	Discovery
Esmeralda	Pinterest, Blogs, Discovery, EdPuzzle, Google	None
Finn	Teachers Pay Teachers, Google, Georgia Standards	None

Interestingly, none of the lesson plans examined indicated an online site as a source of the lesson. If, during the lesson, the students need access to a webpage or online resource to complete the lesson, it was listed but the source for the idea was never documented. This made for some interesting conversations during the second interview. Esmeralda says,

I never really thought about it but we don't really have a place on the lesson plan for the origination of the idea. There is a place for links that you may use in the lesson but not a place for where the lesson came from. (Esmeralda, personal communication, July 24, 2019)

Charlotte also made a point,

Most of the lessons I find, I modify a lot and never use them verbatim so I never really document where I got the idea. It isn't that I am denying credit, it is more because I never just take things and use them. I always change it as go. (Charlotte, personal communication, July 23, 2019)

Breanna provided a lesson plan with some assistive technologies used to help bring

students up to grade level and bridge the gap in their learning. Several of the technologies were

chrome extensions that teachers can allow students to use. One example was the TTS extension,

Breanna shares her experience with this assistive technology. She says:

> I first heard about the text to speech extension at GaETC a few years ago. I went to a
>
> session with this guy who presented a bunch of chrome extensions and that is where I
>
> found out about it. There really isn't a place on the lesson plan form to put that. I never
>
> really thought about that before. (Breanna, personal communication, July 23, 2019).

Lesson plans may not reflect the sources of instruction but according to the participants, it may

not be an oversight or intentional omissions but it may be due to the lesson plan format being

used.

Storage of instructional materials. Of all the revelations during the study, one of the

more varied is how each participant stores their instructional materials for later retrieval. All of

the participants use an electronic file system; however, they have very different systems and

methods. Esmeralda, Demarco, Axel and Breanna all use Google Drive, Charlotte has a portable

hard drive she favors but she will also use Google Drive or email files to herself, if needed. Finn

is the only one who uses Dropbox. Esmeralda and Axel have a single Google Drive with

everything personal and professional on the same account. Demarco and Breanna have different

accounts for personal and professional. Finn has kept his Dropbox because "it is overwhelming

to think about moving everything" but he has been forced to venture into Google Drive at work.

All of the other participants were familiar with Dropbox and it came up in the focus group.

Esmeralda said "I used Dropbox for everything but then it got too expensive and Google Drive was free through the school so I switched over" (focus group, August 10, 2019).

Another key topic was how new ideas get saved for future usage and planning. Esmeralda, Breanna, Charlotte all use Pinterest. In the focus group, they specifically talked about the Pin-It Google Chrome extension. Breanna commented that she loves that she can be on any site "click on the Pin-It button and save it to Pinterest". Axel, Demarco and Charlotte also still use Bookmarks. Esmeralda says she thinks screenshots stored in Google Photos to be the most useful. Axel uses the notes section on his phone to make reminders to himself and to paste links to anything he wants to be able to find later. He also says that he will "take a screenshot or share the link with myself by sending myself an email or a text" (personal communication, May 29, 2019).   Charlotte just recently discovered Google Keep and Pocket and has been using both to save information to read or review later. Charlotte says that labels in Google Keep have been a huge timesaver for her. She shared that she "developed hashtags for each of my units and when I find something, I just save it to Google Keep with the hashtag and it automatically saves it under that label" (personal communication, May 30, 2019).   All of the participants revealed that they are saving or storing information which they never actually use for instruction.

The transition from location of materials to usage in instruction. All of the participants were asked about their search for instructional materials in their Digital Habitat and how much actually made it into their curriculum. All of the participants admitted that less than 50% of their saved materials ever actually make it to a classroom activity or lesson. Axel says,

I have good intentions but I do most of my searching during the summer or off season

and then when I get really busy, I tend to fall back on what I already have. It takes a lot to

make and use new stuff. (personal communication, May 29, 2019).

Charlotte reported that she "tries to organize things well in Pinterest into Boards by unit. This

helps a lot. Then when I get to each unit, I commit to doing one thing that I have saved on my

boards but it doesn't always happen" (Charlotte, personal communication, May 30, 2019). For

Finn and Demarco, it depends on how ready the resource is to use. Demarco shared that there

are some lessons you find that are "easy to download and use without much change but if I have

to adapt it a lot, I may save it but sometimes I will forget about it or just decide it is too much

work and not do it" (personal communication, May 28, 2019). Time seemed to be the biggest

obstacle for Finn. He stated, "I get busy and run out of time... so, I will find cool stuff but then I

don't use it because it takes too much time to modify or update it" (personal communication,

May 28, 2019). All of the participants said that they primarily use digital resources for

curriculum but do consider the curriculum materials purchased by the school, if available.

Charlotte says,

> The problem is that the schools have quit buying textbooks. I don't think any of the
>
> departments have gotten textbooks since the mid-2000s. The book I am currently using
>
> is from 2006. I only have a class set so the students can't even take the home. It really is
>
> a problem. They say it is because curriculum is moving away from textbooks but I think
>
> it is more about money. (personal communication, July 23, 2019)

Curriculum inclusion and use of materials may also be related to choices out of the participants

control that are made at the district level.   Since they are short on textbooks, Axel, Finn and

Charlotte have turned to more digital sources of content. It is hard because their respective

schools do not have a computer for every student so they have to schedule computer access but

all three have begun substituting computer aided instructions for textbooks. Esmeralda, Breanna

and Demarco are all required to do some computer instruction due to initiatives at their schools

for test preparation and remediation. During the classroom observations, there were many

examples of students using instructional materials derived from a Digital Habitat source. The

table indicates the observation data collected

Table 16

Instructional usage of Digital Habitat Elements by Digital Native Educators & their Students

Participant Observed	Observation Date(s)	Digital Habitat Element(s) used during Observation	Mode of Access of Digital Habitat Element by Instructor	Mode of Access of Digital Habitat Element by Students
Axel	7-24-19	Twitter, Instagram	Phone	Phone
	8-10-19	Group Me	Phone	Phone
	9-3-19	Twitter	Phone	N/A
Breanna	8-10-19	iReady	Desktop Laptop	Chromebook Desktop
Charlotte	8-2-19	EdPuzzle, PHET, Padlet	Desktop	Phone, Desktop
	8-9-19	Google Slides	Desktop	N/A

	10-7-19	Google	Desktop	N/A
Demarco	7-24-19	Twitter, Instagram	Phone	Phone
	8-5-19	Google, PhotoMath, Desmos	Phone, Laptop	Phone, Laptop, Chromebook
Esmeralda	5-27-19	Twitter	Phone	N/A
	8-5-19	Google Classroom, Pinterest	Desktop	Chromebook
Finn	7-24-19	Twitter, Instagram	Phone	Phone

Charlotte's adventure with the modified flipped classroom. While all of the Digital

Native educators demonstrated use of their Digital Habitat during the observations of their

instruction, Charlotte was unique. She segregates her instruction into digital and traditional days,

adopting a modified flipped classroom this year. In the past, she would randomly sign-up for

computers, as needed. This was very frustrating for her because she would frequently not have

access when she needed it. This year, she took a different approach and signed-up for the

computers two days a week for the entire school year during the first week of school, assuring

that she would have access. She has redesigned the structure of each class so that two days a

week instruction is electronically differentiated and delivered and three days are more traditional

with assessments, labs and lecture. Charlotte was observed several times over the course of the

research study. One of the observations was during a day when she had computers to use in

instruction (August 2, 2019) and another was during a traditional lab day in which she did not

have computer access for instruction (August 9, 2019). One of the most interesting findings was

the number of student interactions and how they differed with the two different instructional

modalities. During the instructional day when the students were working on computers, they

were completing an EdPuzzle video and working on a PHET lab simulation. Charlotte explained

that she modifies most of the EdPuzzles she uses but will use the PHET simulations verbatim.

Charlotte had a Padlet projected onto the board with an agenda and a place where students could

interact and ask questions. She spent most of the period at her computer digitally interacting with

the students. Students were also sending her private messages via email if they did not want their

question or comment posted on the board. During the class period she interacted with every

student multiple times. In contrast, the traditional day was a lecture and then a lab. During the

lecture most of the students were just copying down information and during the lab, they were

interacting with each other but rarely with Charlotte directly. This contrast came up later in

conversation. Charlotte says:

> I am not sure why but they are more comfortable asking questions and interacting via text
>
> on the Padlet or by email than by raising their hands and verbally just asking a question.
>
> They actually request that I lecture more now and I was curious about that. After I dug a
>
> little deeper in conversation with one student, I realized it is because they are not being
>
> required to interact and think. They can just sit and copy words down and don't really
>
> have any responsibility to interact in the classroom. When they are doing an interactive
>
> activity, they can't rely on me to provide an answer to fill in the blank on a worksheet.
>
> They have to actually think for themselves and that is harder for them. (Charlotte,
>
> personal communication, August 9, 2019)

This was also evident by the observation data. All 26 students initiated a least one

question or interaction during the digitally delivered instruction; whereas, only seven students

asked questions on the traditional day (Charlotte, classroom observations, August 2, 2019; August 9, 2019). This indicates that students may have a greater level of comfort with digitally soliciting help than in person and may be a further area of exploration.

    Trust in Digital Traveling. Recently, Charlotte was grading a problem set that she had assigned the class and noticed all of the students were providing the identical, yet wrong, answer. Charlotte found this odd and she said:

> At first, I was so confused. It is strange to see the exact same wrong answer on multiple papers of good A students. I was pretty sure they weren't copying from each other either because they are really competitive. Two of the students are really at each other's throats a lot because they are ranked first and second in their class. I knew that they weren't sharing information but it was crazy how they both got the same, detailed, wrong answer. Then, I began to wonder if they had used Google to look up the answer. After I Googled the problem, I found the solution that they had all provided. It showed up a lot. It was wrong but it looked creditable because it was the most frequent answer shown. Unfortunately, all of these wrong answers online must have been copied and transposed from an original, incorrect answer. (Charlotte, personal communication, October 7, 2019).

Charlotte goes on to explain that it actually made her question herself. She was worried that she was actually the one that was wrong, even though she has been doing this type of problem for almost 20 years. She actually went down the hall and solicited advice from the Calculus teacher to make sure she was doing the math right. They both concurred and then she was able to have the confidence to face the students and feel confident that she could oppose the internet source.

She says, "Some of the students still wanted to argue with me when I went over the problem.

They had a really hard time accepting that the internet could be wrong" (personal

communication, October 7, 2019). During the observation, the students pulled up the problem

solution on their phones to use as evidence that they were actually correct in their solution.

When pressed for more information, the valedictorian of the class said, "Well, I couldn't figure it

out and when the same solution kept showing up over and over, I just figured it was correct"

(Observation, October 7, 2019). This led to some interesting discussions around the classroom

about how trustworthy or untrustworthy internet sources are and how to approach information

critically.

Axel and Esmeralda both also shared their frustrations with students being able to just

Google instructional materials and see answers. Esmeralda was doing a STEM activity using an

egg-drop lab but had to discontinue that particular activity. She explains,

> The kids were all just going on Pinterest or Google and copying ideas they found. They
>
> couldn't explain the science or why they were designing their egg drop container, they
>
> just copied something they found online. The parents all expected them to get a good
>
> grade on the project because it looked good but few of the kids could really explain the
>
> science. That experience has forced me to move away from that traditional lab and try to
>
> find new labs and ideas and it is hard. (Esmeralda, personal communication, August 11,
>
> 2019).

Demarco says that he has noticed answers being available for most worksheets and

commercially produced curriculum materials online. In fact, he shares that he wanted a teacher's

edition for a textbook that the school did not have so he went on Amazon and bought an old

edition for ten dollars. He said. "It made me realize how easy it is for kids to get access to

teacher materials with the answer keys" (personal communication, August 5, 2019) During an

observation, one of the students asked why Demarco and the co-teacher didn't just use the

worksheets that come with the book. He says, "We don't assign worksheets or things out of a

textbook anymore because all the keys are online. I don't need to know if you guys can use

Google to locate answers, I need to know if you actually know how to work the problem"

(Demarco, observation, August 5, 2019). During this particular observation of a class, the

activity was to observe problems that had been worked out and explain if there were any errors

and what the errors were. The students expressed frustration. One male student said, "this is

dumb. I don't care if some idiot is wrong. Why is that my problem?" (Demarco, observation,

August 5, 2019). The students were allowed to use any available technology to solve the problem

and critique the provided answer. Several students chose to use PhotoMath and a few were using

Desmos. Some were typing the problem in and trying to find the answer using Google. Demarco

whispered to one group, "why don't y'all just try to work out the problem instead of trying to

find it already worked out online? How do you even know if what you find is correct? You need

to trust yourselves and work it out " (Observation, August 5, 2019). The other teacher working

with Demarco tells a group of students,

> I know you guys think we don't want you to use the internet or we think you are
>
> cheating. That isn't actually the problem. The problem is that you need to know whether
>
> the information you actually find online is correct and you need to be able to use it or
>
> discard it. What is crazy to me is that you guys will just use Google and you decide that
>
> if it is on the internet, it must be correct. No matter how many times we tell you that

anybody can put anything on the internet, you still trust all this information posted by

some random person. Why is that? (Observation, August 5, 2019).

After that observation, I followed up with Demarco to see how the kids actually did on the

assignment. He said they did ok but "many of them still have more confidence in what they find

online than they do in their own calculations. It has been a struggle to get them to quit looking

online on those homework helper sites and just taking that information as gold" (personal

communication, October 7, 2019). All of the observations indicated that Digital Native

educators do utilize their Digital Habitat elements with instruction but still face struggles to get

students to critically analyze and be selective about the information that they trust online.

Summary

Overall, the findings of the study demonstrate the participants' interesting and excessive

usage of their Digital Habitats personally and professionally. They are solicitous to their

Habitats, often adopting an artisan approach to their cultivation. This multifaceted usage by

Digital Natives may be abstruse to Digital Immigrants whose erudition was garnered from more

traditional sources. As educational leadership measures the cognitive abilities of prospective

young Digital Native educators, it may be necessary to find ways to foster and support their

gregarious natures in the professional landscape. In the subsequent chapter, a discussion of the

findings will bring the study to the dénouement.

Chapter 5: Discussion

This chapter will discuss the findings of the study. The discussion will purport on the purpose of the qualitative case study; which was to gain insight into the use of Digital Habitats by Digital Natives in their professional practice as educators. Efforts will be made to link the findings back to the established literature as well as indicate implications for future research.

Discussion of the Findings

The following discussion is organized by identifying the key findings of the study, how they are related to the published literature and how they extend the current knowledge and understanding for the specific stakeholders in education.   Then, the limitations of the study are considered. Finally, avenues for future research are presented and explored.   All of these discussions are designed to shed light on the overarching research question and sub-questions. The overarching question for the research was: **How are Digital Native educators using Digital Habitats in their professional practice?**

In order to investigate in depth, the following topics and sub-questions helped guide the process.

Research Sub-Question 1:

How do Digital Native educators describe their Digital Habitats and the interactions that occur there?

Research Sub-Question 2:

How are Digital Native educators interacting with hashtags and pins in their Digital Habitats for professional learning?

Research Sub-Question 3:

How are Digital Native educators incorporating information from their Digital Habitats into the instructional practices?

The Central Issue

The study was framed around understanding how Digital Native educators are using Digital Habitats in their professional practice. In order to better serve teachers and teacher leaders as they are developing and fostering pedagogical skills and interacting in a Digital Habitat, education leaders need more information on how they are selecting and utilizing these technology elements and affinity spaces so we can better guide the process and foster professional and deliberate usage.

Key Findings of the Study

Once the data was analyzed for themes, several key findings emerged and were carefully considered in relationship to the different stakeholder groups in education as well as how these findings either supported or failed to support the established topical and theoretical literature. Each of the following findings will be considered:

1) Digital Habitat- A new definition.

2) Digital Habitat Diagrams- Visualization of Elements

3) Categorization of Interactions in a Digital Habitat

4) Digital Habitat Identity

5) Hashtags- More than a Digital Habitat Accessory

6) Pins- from Curation to Collaboration

7) Costs of Instructional Planning

The discussion will address the implications of the findings on different stakeholder groups in education and how the data collected is related to different aspects of the field.

Digital Habitat- A New Definition.

Wenger coined the term Digital Habitat in 2001 to be a wide range of technologies and their ability to support communities of practice (Wenger, White, & Smith, 2009). In 2009, Wenger, White, and Smith further expanded the definition to include a mutually-defining relationship that depends on the learning of the community. All of the participant contributions supported Wenger, White, and Smith (2009) as well as research by Gunawardena, et al. (2008) that social platforms facilitate "collective intelligence through social negotiation" (p. 5). The participants illustrated Gunawardena's, et al. (2008) point that individuals interact in their habitat to engage in a common goal or a shared practice and Druckenmiller and Middleman's (2015) focus on building capacity within a virtual collaborative network. The term habitat is derived from the Latin *habitare*, which means to dwell and has been used since 1755. A Digital Habitat, like an ecological habitat, is characterized by the interaction between the abiotic and biotic factors that contribute; therefore, a Digital Habitat is influenced by all the living contributors as well as the non-living technological platforms. Combining all the work from previous research with the data in this study, a new definition of a Digital Habitat and a Visualization emerged:

> **Digital Habitat-** As unique as a fingerprint, a digital habitat moves beyond a professional
> learning network to include all of the elements, both abiotic and biotic, utilized to assist

the individual in their personal and professional interactions to facilitate collective

intelligence through socially-mediated metacognition.

Although their primary platform selection varied, all of the participants utilized the

central platform in their Digital Habitat, Twitter, Pinterest or Facebook, to collaborate in a virtual

community of professional practice. With Twitter, the participants utilized Twitter Chats and

Hashtags to identify, locate and communicate with their personal learning network. Pinterest

provides boards which are able to be shared and also have collaborative functionality which

makes them repositories for professional parking of materials for discussion, use, and later

retrieval. Facebook groups proved vital to one participant who relies on them for collaboration,

troubleshooting, moral support, and instructional inspiration. All of these interactions and

experiences support this new definition of a Digital Habitat as they continue to be a

technological way for educators to connect in a community of practice and move to act as a

medium for personal and professional growth and expression. The interactions are dependent

upon the functionality of the non-living, abiotic, platform and the contributions of the

individuals, the biotic components. The Digital Habitat supports the collection of experiences,

ideas and intelligence to help the whole of the community move from collective strategizing to

shared understanding within the process of socially-mediated metacognition. If either of these

components fail, the Digital Habitat is rendered inhospitable. The Digital Habitat will recover or

rejuvenate when a suitable evolution or replacement of the defective or dysfunctional component

occurs.

Digital Habitat Diagrams: Visualizations of Elements.

Data gathered in this study provides support for Carpenter and Krutka's (2014)

conclusion that users report an intense and varied use of Twitter in their professional practice.

This multifaceted use of Digital Habitat elements also extends support to Irvine (2015) that

Pinterest provides users with a professional learning network or professional learning

community. Other Digital Habitat elements, such as Facebook and Instagram, were also

revealed to be useful for Digital Native educators personally and in their professional practice.

All of these platforms and elements work together to support the growing use of social media

and social networking by educational professionals (Seaman & Tinti-Kane, 2013) as part of their

digital professional learning networks (Kukulska-Hulme & Shield, 2008). In addition, the

participants in this study demonstrated use of their Digital Habitats which goes beyond simply a

PLN and integrates into all aspects of their personal and professional lives.

These findings only partially supported Fan, Radford, and Fabian (2016) that individuals

in their twenties were more likely to use social networking and learning management systems;

whereas, individuals in their thirties were utilizing social bookmarking and web authoring tools

(p. 4). This is another example of how this type of research, on technology, can be relevant and

trustworthy when published and quickly become outdated. Another possibility is that a larger

sample size, quantitative or mixed method study is need to make a definitive conclusion. All of

the participants reported frequent use of social networking and Google Classroom, their chosen

learning management system. This usage was independent of the age of the participant. Three

of the participants reported use of Pinterest for social bookmarking; however, one of the

participants is in her twenties. All of the individuals mentioned web authoring and blogging but

it was not revealed to be vital to any of the participants' professional practice, independent of their age.

The Social Networking Spiral as proposed by Gunawardena, et al. (2008) was a useful scaffold for the creation of an updated Digital Habitat Diagram. The spiral format indicates the circular functionality of many of the interactions in a Digital Habitat. Each of the participant's contributions in the study supported the need for updating the original structure of Gunawardena, et al. (2008) to make the model more flexible to show individuality and include a more comprehensive level of social mediated metacognition. The participants revealed that the context (I) of their Digital Habitat influences the discourse (II) which leads to action (III), reflection (IV), reorganization (V) and finally socially mediated metacognition which can be delineated into collective strategizing (VI) and then finally, shared understanding (VII). The graphical representation below shows the progression of Breanna through this spiral as it relates to her experience with Pinterest. It is interesting to note that one of the weak skills of Digital Natives, revealed by Prensky, (2006) is the skill of reflection. Gunawardena, et al. (2008) describes one possible framework for Digital Natives to use reflection in their interactions in their Digital Habitats. For Breanna, she will collectively strategize (VI) on the Pinterest boards with other teachers and students. This strategizing sometimes leads to another reorganization of the boards and then finally to a shared understanding (VII). This level of socially mediated metacognition, as introduced in 2017 by Van De Bogart, Dounas-Frazer, Lewandowski, & Stetzer, was useful in the visualization of the Digital Habitats of the participants. Breanna progresses through the spiral during each evaluation of her Digital Habitat elements and interactions. She has to carefully consider her selected elements and why they were chosen to

make alternations to her thinking and complete additions, deletions or substitutions as the

technology continues to expand and change. The Digital Habitat Diagram is a fluid graphical

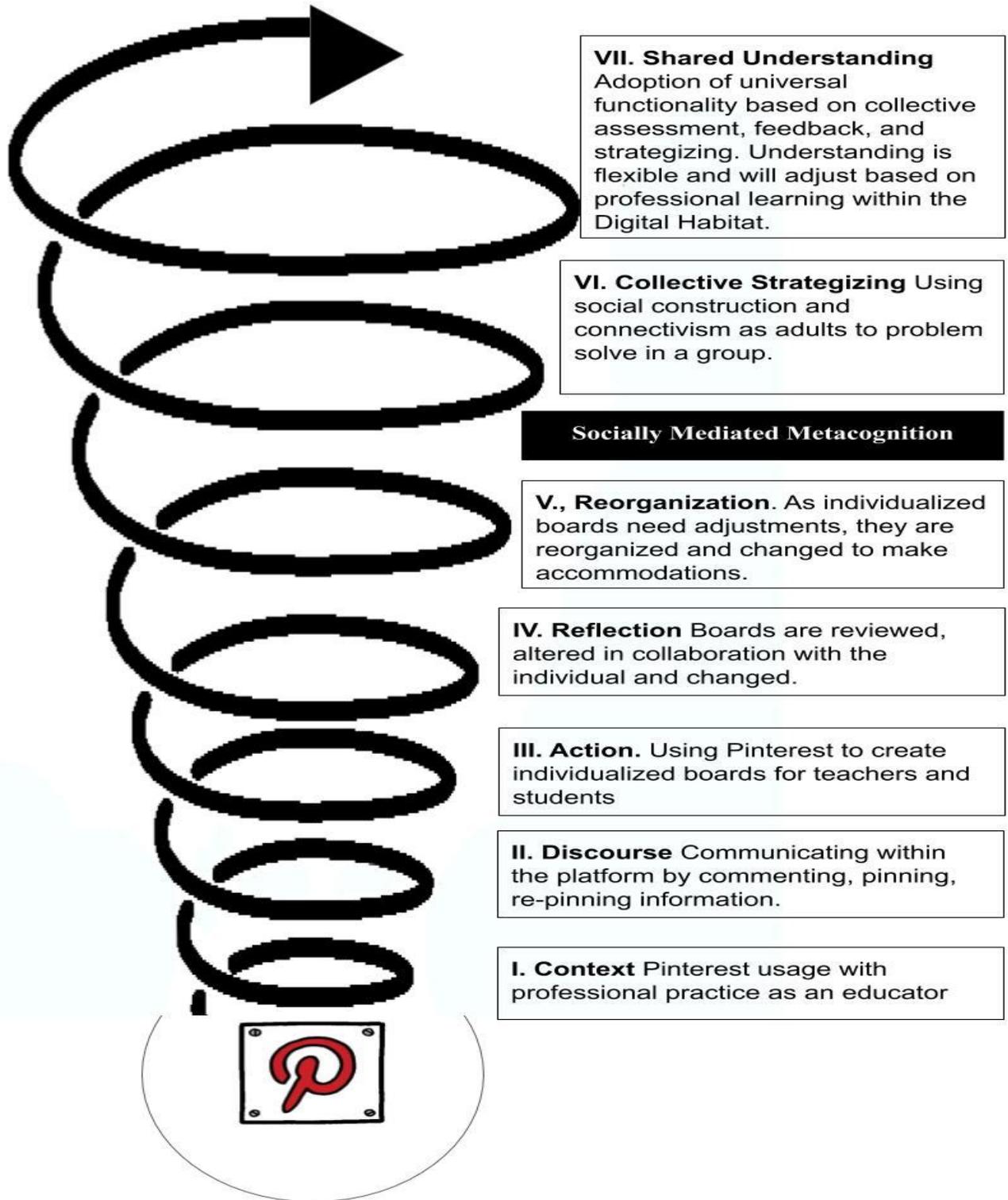representation which is flexible to the growth of the educator.

VII. Shared Understanding Adoption of universal functionality based on collective assessment, feedback, and strategizing. Understanding is flexible and will adjust based on professional learning within the Digital Habitat.

VI. Collective Strategizing Using social construction and connectivism as adults to problem solve in a group.

Socially Mediated Metacognition

V., Reorganization. As individualized boards need adjustments, they are reorganized and changed to make accommodations.

IV. Reflection Boards are reviewed, altered in collaboration with the individual and changed.

III. Action. Using Pinterest to create individualized boards for teachers and students

II. Discourse Communicating within the platform by commenting, pinning, re-pinning information.

I. Context Pinterest usage with professional practice as an educator

Figure 32. Breanna's Digital Habitat Diagram Process

For each of the participants, there was a similar path that could be established showing how the context of their interactions within their Digital Habitats led to socially mediated metacognition.

Categorization of Interactions in a Digital Habitat.

From the early 1970's interactions have been evolving within digital spaces. It was during this time period that early adopters saw the formation of the first Digital Habitats (Wenger, White, & Smith, 2009). This study depicted emerging categories of interactions within a Digital Habitat by Digital Native educators in their professional practice. These categories emerged from the data and include:

> (1) collaboration
> (2) announcements
> (3) publishing and sharing
> (4) curation
> (5) lesson delivery
> (6) learning and developing
> (7) networking

Collaboration. Miller, et al. (2010) proposed that collaboration within a Digital Habitat increases collective efficacy, supports positive attitudes towards the profession and even helps educators develop stronger relationships with students. During this study, several pieces of evidence emerged as support. All of the participants reported using Twitter successfully for collective efficacy. Most educators in the study, four of the six participants, also reported receiving some inspirational message or uplifting information from their Digital Habitat. Within Twitter, specifically with college recruitment procedures, two of the participants have formed close relationships with students using Twitter to share common experiences and collaborate on the promotion of the athlete for the purpose of obtaining a college scholarship. Poulin (2014)

found that educators are using Pinterest to connect with other teachers around the globe and

Charlotte, Breanna and Esmeralda have all experienced that. All three have pins and boards

from teachers who are outside the United States.   All of the participants shared how personal

interactions can happen in their Digital Habitats and collaborative relationships have formed

using technology which lends support for Salzmann-Erikson and Eriksson's (2018) findings and

Grote-Garcia and Vasinda's (2014) proposal that social media has created a greater appreciation

for global collaboration.   The community and collaboration elements associated with social

constructivist theory are easily addressed with many of the social networking tools in use today

(Galvan & Parker, 2011) as described by the participants and evident in the archival and

observational data.

Knowledge of the use of Digital Habitat elements for collaboration is important for all

stakeholders in education. If administrators know that educators are comfortable collaborating

digitally, they could utilize their network to help teachers connect with other experts in their

content areas. Since this collaboration is seamless in these Digital Native educators' daily

experiences within their Digital Habitat, they could complete these collaborations without

needing to travel long distances or even meet face to face. In many cases, an educator may be

the only person within their building or school system who teaches a single subject or specialty

area, like AP physics, band or supporting students with emotional behavioral disorders.

Previously, these individual teachers were isolated and it was hard to find others to share

resources and troubleshoot pedagogy or instructional processes.   Teacher-Preparation programs,

administrators and mentor teachers could help teachers find and add collaborators to their Digital

Habitat; thus, increasing the likelihood that those teachers would have interaction with an *outlier* or expert in their specific content area.

Announcements. Digital Natives are also different from Digital Immigrants in the way that they plan lessons and communicate with their students, many of the participants choosing to communicate online or in a text-messaging or the Remind system. This lends support for Degreff (2014) that many of the interactions that Digital Natives make can cross hierarchical boundaries set by Digital Immigrants. Communications, like announcements, no longer have to happen in person or even be written on the board in a classroom. All of the participants reported using Remind, which is purchased by their districts, to communicate digitally with both students and parents. All of the participants also use the two-way communication feature which allows parents and students to text them back directly in response to an announcement. Palfrey and Gasser (2008) proposed that Digital Natives would be living more of their lives in networked public spaces and this after-hours open communication between parents, teachers and students using technology is one example. Digital Natives no longer limit their teaching to the physical space of the school. They are opening themselves up to communication with students on an as-needed basis.

All stakeholders in education must be aware of how communication is changing and how Digital Habitats can support access to information for parents, staff and students. Teachers, counselors, administrators, student and parents, whether they are Digital Natives or Digital Immigrants, need to be taught how to select these announcement elements to include in their Digital Habitat and how to utilize them to improve their educational experience. If students are to have broad access to their teachers outside of the school day, does this also lead to

conversations about work / life balance, boundaries and making time for self-care? All of these

areas may need to be explored to help keep Digital Native educators from becoming

overwhelmed and thus unable to continue in the profession due to burn-out. These considerations

are important for teacher leaders and coaches, administrators and professors in higher education

as they work with these Digital Native educators.

Publishing and Sharing. All of the participants utilized some element in their Digital

Habitat to publish and share aspects of both their personal and professional lives. All of the

participants also indicated that they are aware of the powerful engagement opportunities that

could be explored in using publishing and sharing tools with students. This supports the findings

of Fan, Radford, and Fabian (2016) and Alharami (2016) who determined that Digital Natives

also demonstrated an affinity for online publishing and sharing as opposed to traditional media.

This interactive sharing appeals to their sensorial cognitive and neuropsychological processes as

described by Palfrey and Gasser (2008). Many of the participants make use of the integrated

aspects of their Digital Habitat elements for posting as well. One post may be shared on

Instagram and simultaneously posted to both Facebook and Twitter. This saves time and allows

for a larger reach into the Digital Natives social network.

This is one area where Digital Immigrants would really benefit from some exposure to

these publishing and sharing tools. Many students are still bringing home a folder in a backpack

full of handouts which may never make it to the hands of a parent or guardian. With electronics

being so pervasive in society now, could these experienced educators and administrators convert

to using more Digital Habitat publishing and sharing tools? How does that transition occur and

how can teacher preparation programs aid early career teachers lead the way in this initiative as

they enter the profession? Teachers need exposure to these publishing and sharing tools in their preparation programs as well as guidelines for sharing. This training and experience will prepare them to be the innovators and pioneers of publishing and sharing in their schools and help inspire the Digital Immigrants as well.

     Curation. Pinterest was previously revealed by Poulin (2014) and Grote-Garcia & Vasinda (2014) to be a tool used by educators to facilitate digital collections and curating. Grote-Garcia and Vasinda (2014) describe Pinterest's organizational and sharing features and conclude that "Pinterest has led some users to describe it as a management tool, virtual pinning board, a tool for digital curation, and a collaborative learning hub" (p. 37). Esmeralda supports this with her choice of Pinterest as her central Digital Habitat element. When she described her choice, she explained that it was because her experiences on Pinterest are so varied and useful in many diametric aspects of both her personal and professional life. Curation is one of the primary reasons the participants use Pinterest but it was not the only reason. Novel mechanisms of curation in a Digital Habitat were also revealed and will be discussed in a subsequent section as a potential avenue for future research.

     File Cabinets are sitting empty in Digital Native educator's classrooms as they curate their instructional materials digitally using online cloud services and tools like Pinterest. Instead of purchasing file folders and cabinets, administrators and superintendents need to look into establishing shared folders or drives. Technology directors and leaders need to also make sure they are not creating unnecessary obstacles to curation by blocking sites such as Pinterest, Google Photos, Google Drive, Dropbox, iCloud and other storage platforms.

Lesson Delivery. Previous studies have reported on the use of Digital Habitat elements to deliver instruction to students (Harvey, 2013; Tang & Hew, 2017). All participants in the study detail multiple aspects of their Digital Habitat which they utilize to support lesson delivery. Some of the elements used for lesson delivery were social networking or social media as reported by Harvey (2013), while others were more traditional learning management systems. The participants demonstrated through sharing their digital archives a historical reliance on lesson acquisition and delivery using their Digital Habitats. Many elements of a Digital Habitat offer a unique blending of socialization combined with project and lesson sharing along with scholarly dialogue and feedback. All of these reported experiences support work of Greenhow and Robelia (2009).

Lesson delivery was one of the areas where the greatest changes were discussed by the participants. Participants are personally paying for lesson delivery services that they are using with their students. Many sites, like EdPuzzle, BookWidgets, BookCreator, FlipGrid, may have free services initially for educators; however, some require you pay a fee once you reach a certain level of usage. There is a possibility that administrators are not even aware of what tools are being used for lesson delivery in their schools. None of the participants in this study asked the school to pay for these platforms. It is interesting that the participants felt the tool was vital to their instruction but they were uneasy about having to justify why they are using a particular instructional tool; therefore, they purchased the platform personally. If school administrators want innovative teachers, they have to support innovation by providing financial support and processes to allow teachers to submit request for funding of these Digital Habitat elements. Engagement and differentiation are buzz words currently in education. In order to increase both,

innovation is necessary and education stakeholders cannot be naïve and think that this innovation is going to be free. These costs will be discussed in more detail alongside the costs of instructional planning.

      Networking. Russo and Watkins (2006) reminds us that social networking has changed the way that Digital Natives access information and exchange ideas. The participants revealed that they are interacting in these Digital Habitats and social networks in both personal and professional manners. The challenge for educators is to balance the tensions that exist between the formal and informal applications of social networking tools (Madge, Meek, Wellens, & Hooley, 2009). As shown in this study, the participants all had to consider how their interactions were being perceived and make measured decisions about their networking with regards to inclusion and exclusion of specific individuals. It was clear that the participants understood that there are benefits from including students, administrators and other peers in their personal social network, they also see the need for balance. For some of the participants, feeling supported by their PLC increased their self-efficacy and a stronger sense of community led to a sense of personal and professional pride (Albion, 2008; Perry & Edwards, 2010). It is also vital that each of the Digital Native participants had the autonomy to personalize their Digital Habitat. Stevens (2014) proposes that this ability to personalize their Digital Habitat is a helpful advantage to using virtual common learning areas and social networking. Since many social networking tools can be accessed virtually anytime and anywhere, students benefit from an increase in the amount of time that they spend engaged in educational tasks and activities (Brady, et al., 2010). All of the participants spoke to the advantages of being able to access experts in their PLC and interact in their Digital Habitats to move beyond the acquisition of foundational concepts to more

complex, authentic tasks that require active participation and collaborative social construction. (Archambault, Wetzel, Foulger, & Williams, 2010). Charlotte's experience with Facebook groups and Axel and Esmeralda's experiences with Twitter chats provide evidence to support Irvine (2015) that teachers are "driven by student needs, variety, [and] alignment to state standards" (p. 74-75). Charlotte also speaks to the importance of feeling a sense of belonging and identifying with the struggles and successes of other educators. Poulin (2014) also found that social networking tools provide educators with a sense of belonging in their teacher educator community (p. 97). The Twitter and hashtag experiences of the participants at conferences also supports Doering, Lewis, Veletsianos and Nichols-Besel (2008) who asserted that learning is constructed through the social experiences of individuals in their learning community as part of their connectivism.

Networking also identifies a need for these Digital Natives to have a sense of community and want to connect with a larger group in their profession. When administrators and teacher leaders are making decisions about school climate, they need to consider how the culture of the school is supporting Digital Natives. These educators are seeking connections, collective strategizing and coming to shared understandings within their Digital Habitats. If mentors and more experienced educators are not a part of these Digital Habitat interactions, can this lead to a loss of community within the school faculty? If too many of the educators within a school are connecting in their Digital Habitat at the detriment to their face-to-face connections, the school may start to lose a sense of community.   The best way to prevent this is to have a school sponsored Hashtags, Twitter Chats, Facebook Groups or Pinterest Boards. These resources

provide a platform and outlet for the Digital Native educators and connect the brick and mortar

schools to their online tribe.

Identity in a Digital Habitat

Five of the six participants intermingle professional practice and personal publishing

within the same account and sometimes within the same post. This supports that Digital Natives

have different expectations of how they work and play as presented by Basso (2008) and that

they are constantly intertwining the personal and the professional. Poulin (2014) found that

social networking provides users with a sense of community where students exchange both

personal and academic information (p. 36). Salzmann-Erikson and Eriksson (2018) showed

examples of publishing and sharing which integrated all aspects of Digital Native lives into their

Digital Habitat. Axel, Demarco and Esmeralda all supported that there is truly a blurring of the

lines between the Digital Native personal and professional personas by posting many personal

and professional interactions on Twitter during a single tweeting session. Many social

networking sites offer a unique blend of socialization for students combined with project sharing

and scholarly feedback (Greenhow & Robelia, 2009). From the perspective of these Digital

Native participants, identity was not broken up into online and offline; however, there was

critical thinking and measured posting to maintain the ethics standards expected from educators.

The study also supports Coombs' et al., (2010) conclusion that educators who publish their work

to a community discussion board or other shared web space often have a sense of vulnerability

yet also a desire for self-improvement because they prefer to do whatever is necessary to grow

professionally. Salzmann- Erikson and Eriksson (2018) found a mixture of professional and

personal hashtags within the same post. This was supported by the archival Twitter and

Instagram data gathered during the study.   Language Registers and Code-Switching are also key revelations within the study. Silvers, et al., (2007) discovered when individuals in a learning community spend time together, they begin to use a common language that reflects learning and application of theory. This was demonstrated by the data in the study. A majority of the participants conformed to the language register used within the PLC that they were interacting. Archival data demonstrated that the individuals would effectively code-switch anytime others in the PLC applied a higher language register.

This melding identity and loss of language register and code-switching among Digital Natives has the most potential to create controversy within the field of education. For Digital Immigrants, historical adherence to Language Registers is ingrained in their teacher preparation programs and training. Beginning with Joos (1961), teachers have been compartmentalizing their professional selves and presenting them to students and parents. A new conversation must occur to determine the direction of education in terms of identity. Will education embrace the holistic approach of the Digital Natives whose personal and professional lives intermingle seamlessly or will the conservative compartmentalization tradition reaffirm Joos (1961) and seek to justify a separation of personal and professional aspects of the Digital Habitat? One thing that is clear, this conversation and open line of communication needs to occur; otherwise, there could be serious misunderstandings between the Digital Immigrants and their expectations and the realities of the Digital Natives interactions in their Digital Habitats. If the leaders in education are not developing the behavior expectation for Digital Habitats and communicating those guidelines with teachers, it is certain to be #awkward and #embarrassing in the near future when they are having to be reactive to a situation that is inevitable.

Hashtags- not just a Digital Habitat Accessory

For all of the participants, social media and digital sources have become a favored alternative to traditional media. This supports the 2016 work of Alharami which found that Digital Natives are selecting resources by giving preference to digital sources. Zurita, Baloian and Jerez (2018) explored the use of these collaborative hashtags and found that they facilitate knowledge construction. The participants gave many examples from their Digital Habitat interactions with hashtags to support this finding. Axel shared how he collected conference resources by accessing tweets through the conference hashtag. Esmeralda revealed that hashtags help her locate information useful to her in her professional practices, specifically lesson planning. She detailed an experience with a #MakeItReal chat that helped her construct knowledge and learn to produce more authentic lessons. Hashtags are being adopted by individuals, schools, teams, colleges, businesses and even countries.

Hashtags are unique in this study due to their ubiquitous nature. They are being used across platforms and connect multiple elements within a Digital Habitat under a central umbrella. You can utilize a college or school hashtag as a google search tool and it will pull information from the web independent of platform. For example, in the image below, you can see the Google Search results pulled from a search of the #KSUITEC hashtag (2019) used by the Kennesaw State University Instructional Technology Department. When searching for this hashtag, the results pulled information from Twitter, Facebook, LinkedIn and the KSU webpages. Hashtags, as utilized by the participants in this study, bring about an elegant specificity which allows for networking to seamlessly integrate with any established platform.
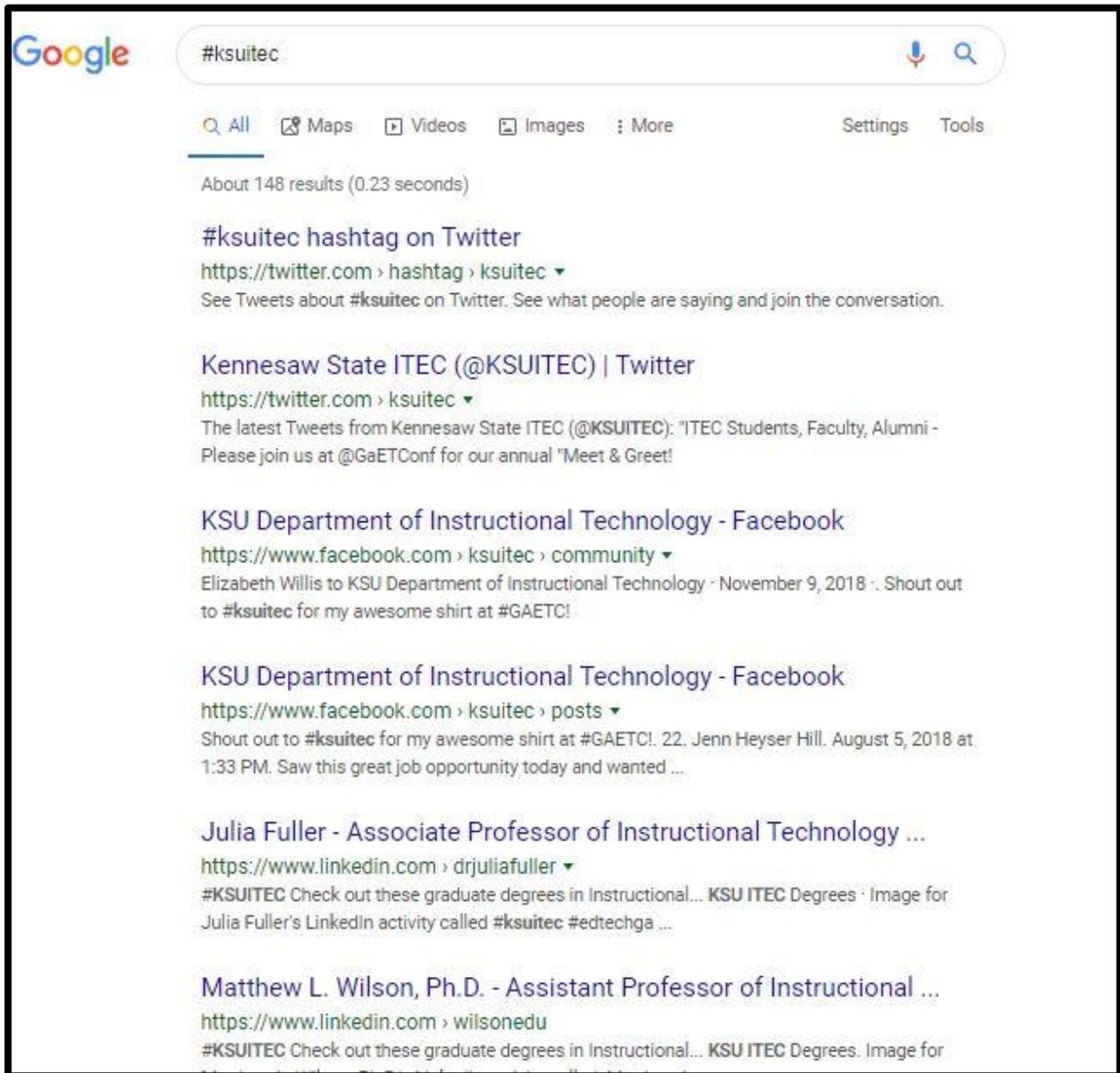
Figure 33. Google Search results for #KSUITEC Hashtag

Hashtags are a powerful tool which should be specifically taught in teacher preparation

programs and leadership conferences. Digital Immigrants need to know the purpose of hashtags

and how to use them effectively in their communication with their school communities, faculty

and professionally with their own Digital Habitat connections. For example, when pulling data

for school accreditation, one of the important areas to address is communication with community stakeholders and parents. Hashtag data is a great way to show how the school is communicating success, expressing and addressing concerns and also fostering a sense of belonging.

Pins- from Curation to Collaboration

Participants in this study who utilize Pinterest as one of their Digital Habitat elements mirror the findings of Poulin (2014) that Pinterest allows connections with people all over the world around common interests. All of the participants have curated boards that help them develop and hone their pedagogical content knowledge as Grote-Garcia and Vasinda (2014) set forth in their study. The pins and boards described by Breanna are an example of how Irvine (2015) proposed that the collaborative boards have the elements to transform into a professional learning community of sorts when the ability to comment, share, and pin together occurs (p.3).

Participants have moved away for traditional storage of files in cabinets or binders and all of the participants in this study used some form of cloud storage. They organized their instructional materials to be accessible from anywhere and made use of their habitat elements to aid in the process. Pinterest, Google Drive, Dropbox and even Email were all mentioned as ways to store information for later retrieval. Support was provided for Grote-Garcia & Vasinda (2014) who stated that these Digital Natives have always had information at their fingertips and want to be able to connect with their information quickly and easily. Fan, Radford, and Fabian (2016) reported Digital Natives using social bookmarking professionally and this study provides support for that assertion.

None of the teachers who used Pinterest in this study were aware of the education hub provided by Pinterest. All of the participants came to use Pinterest personally and transitioned to

using it professionally with no training. None of the participants were trained initially or have

had any subsequent training to use Pinterest as an educator; yet, they find it to be vital to their

instructional planning and practices. This is concerning. How are these teachers supposed to

learn how to properly analyze the source of lessons or to critically question content located on

Pinterest without any practice or experience? We must incorporate Pinterest into our teacher

preparation programs and identify it as a repository of instructional materials. We must open the

conversation with Digital Natives about the usefulness of Pinterest and other elements in their

Digital Habitat so we can all work together to collectively strategize on their usage and come to a

shared understanding.

Costs of Instructional Planning

The Digital Natives in this study provided evidence that being able to locate and select

resources quickly was one of the benefits of using a Digital Habitat element. They still select

resources from traditional media, if it is purchased by the school system; however, many are

turning to their Digital Habitat due to lack of provided resources. The participants in the study

supported work by Soderholm, et al., (2018) that Digital Natives are comfortable with the

consumption of user-generated content found on many social media sites. Abramovich, Schunn

and Correnti (2013) made a convincing argument that easy accessibility of resources is important

to teachers. Cost of instructional platforms and resources is also a concern. The table below lists

the Digital Habitat elements utilized by at least one of the participants which incur a cost.

Transparency is key when budgeting and considering these extraneous costs to the teacher

workforce.

Table 17

Habitat Elements and their Cost

Habitat Element	Cost- Individual	School or District Pricing	Instructional Usage
EdPuzzle	Free up to 20 Lessons 20+ Lessons- $9.50 / month	$95/ month per school	Edpuzzle.com allows users to embed lessons into video selected from an online source or uploaded by the user.
Zipgrade	Free up to 100 Scans per month After 100 scans, individual must purchase subscription. $6.99 annually	$6.99 annual cost / teacher	Zipgrade.com allows for the quick grading of assessments.
Book Widgets	$9.00 / month or $49.00 annually	$49.00 annually / teacher +10 Teachers – $35 annually / teacher	BookWidgets.com can create lessons and embed these Widgets into a website or a LMS.
GameChanger	$49.00 annually	$99.00 per season $249.00 annually	Gamechanger.com is a platform for sports scoring and statistics
Hudl	$900 100 hours of Video	$1600 200 Hours of Video $3300 500 Hours of Video	Hudl.com is a platform for video analysis, sharing and a recruitment support tool

All of the participants asserted that free or district provided services would be utilized more often; however, they are willing to pay for a platform or element in their Digital Habitat if it provides a niche service or function in their professional practice. The more important question is why an educator who finds something vital to classroom instruction would not be comfortable asking for funding? Innovation can only happen if educational leadership is encouraging, fostering and funding these pioneers to facilitate disruptive change. Costs of instructional planning is not just about money; time is also an issue.

Doering, Lewis, Veletsianos, and Nichols-Besel (2008) asserted that learners use social experiences in a community to construct new knowledge and connect with others in their Digital Habitat; however, this type of knowledge construction takes time. One educational application of Twitter is the participant's testimony of use at professional conferences. While Perry and Edwards (2010) discussed the ability for conference attendees to post information which can be accessed by other professionals in real time via Twitter as unprecedented, a majority of the participants in this study detailed using Twitter, Instagram and Facebook for precisely the purpose of interacting during a conference for the purpose of learning and development. During these interactions, Digital Natives are connecting with others in their Digital Habitats and engaging in online discussions using social networking tools as they socially construct skills for professional practice. In order to have these experiences, teachers must make time to go to conferences, participate in Twitter Chats or Facebook groups and spend time on Pinterest boards looking for innovative and pioneering instructional materials. This time is vital to their growth as an educator and consequently, the growth and progress of their students. This contrasts with the work of Madge, Meek, Wellens, and Hooley (2009) who concluded a decade ago that social

integration and informal learning were more about socializing and talking to friends about work than for actually doing work. The evidence presented in this study reinforces the assertion that research on technology in education can quickly become outdated as the platforms evolve and the individuals in the workforce change. These educators are not simply socializing and leisurely spending time on these platforms, they are actively engaging to socially construct Digital Habitats which support them as educators.

Limitations

As previously recognized, there is always the risk that purposeful sampling (Maxwell, 1996) may not lead to practical generalization to all educators. One of the limits of this study is that only six participants were in the bounded case. At best, this gives only a glimpse into the classrooms and professional practices of Digital Natives. Every effort was made through member checking and follow-up interviews to work with the participants to make sure the findings and conclusions were an accurate reflection of their personal contributions. Time is also an issue. Research on technology is always at risk of becoming outdated quickly. That is one reason why it is imperative to include flexibility into the new Digital Habitat Diagram so that those limitations can be recognized and allowances provided.

Implications for Future Research

As a single case study, it would be presumptuous to think that any of the findings are completely novel or can transfer as a generalization to all Digital Native educators in their Digital Habitat. Instead, all of the key findings could be expanded into future studies for deeper

revelations and meanings. In some cases, the finding conflicted with a published study. That may indicate that time is an issue. Many of the topics discussed and observed in the study are constantly evolving and changing; therefore, these future research ideas are presented to be critically analyzed and carefully considered for further exploration.

Pinterest for Personalized Learning.

Breanna's experience with the creation of boards for collaboration with students and parents to aid in their educational goal attainment may be an area for exploration for teachers of students with specific learning needs. Could teachers help students create their Digital Habitats by adding assistive technology tools which help to fill in their instructional gaps?

There may even be a niche here for the much needed social-emotional learning that is being mandated for public school systems. Could boards for social-emotional skills be prepared by professionals for use by teachers, parents and students to foster needed skills and learning? Further exploration is needed. Personalizing Pinterest boards for students as a form of differentiation is an interesting and mesmerizing possibility.

Language Registers and Code-Switching.

With so much overlap between professional and personal postings and the constant intermingling of both personas as seen in this study and others (Palfrey & Gasser, 2008; Salzmann-Erikson & Eriksson, 2018; Wang, 2013), is it time to have a better framework for language registers and code-switching? What constitutes a formal relationship anymore and distinguishes it from a casual relationship? Many of our role models, content experts and even world leaders are interacting in their Digital Habitats in casual and consultative ways. Is it still

appropriate to expect Digital Natives to maintain a *professional* demeanor when interacting with students and in the workplace and to switch to a more *personal* version of themselves later?   It is also important to consider when this code-switching should happen. Currently, guidelines for educators are missing with regards to the expected language register and interactions. With no expectations, it is not surprising that Digital Natives are holistically adopting a more casual register and blending their personal and professional personas into a single identity. It brings into question the level of formality that is expected and how that register is expressed to uphold the educator's ethical code.

Accessing a Digital Habitat.

All of the participants reported accessing their Digital Habitat from a mobile device supporting the idea that mobile Computer Supported Collaborative Learning (mCSCL) is prevalent in the digital traveling of Digital Natives. Soderholm, et al. (2018) and Salzmann-Erikson and Eriksson (2018) both provided support for mCSCL as the number of mobile phone subscribers is increasing. According to DeGusta (2012) smartphones are the only technology that moved as quickly to the U.S. mainstream as television did between 1950 and 1953. As more Digital Natives are reliant on their phones as their primary means for accessing their Digital Habitat, these findings support "the increasing need among users for being able to access these [Digital Habitats] using mobile devices, such as tablet computers and smartphones" (Fan, Radford, & Fabian, 2016, p.2). The study provides support for DeGusta (2012) assertion that "one thing seems certain: squeezed between tablets and ever-smarter phones, the PC is seeing its reign as the world's "personal" computer draw to a close" (DeGusta, 2012, para. 20). As this

transition happens, it will be important for more studies to be carried out on mCSCL and how it will continue to evolve and change the landscape of education.

Hashtags

Hashtags, which started out as social networking visitors, have quickly become roommates. They are a pervasive vital component of Twitter and Instagram. Teachers are developing and using personalized hashtags for their classes, families have hashtags for events like weddings and even athletes are adopting their own hashtags for branding and self-promotion. Schools are using hashtags for their systems for publishing and networking. More studies need to focus on hashtags specifically. It would be revealing to investigate exactly how Digital Natives are developing and selecting their personal hashtags. In addition, how are schools using hashtags on their social media accounts? Can hashtag data be used for evidence collection and data reporting for accreditation? Finally, how are students impacted by the use of hashtags and what are their experiences teaching us about the future role of hashtags in our Digital Habitats?

<div align="center">

Summary

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The gregarious nature of the Digital Native educators in this study supported their infusion of Digital Habitat elements into their personal and professional landscapes. While it is possible that the relationship between Digital Natives and their Digital Habitats is statistically unrelated, it is unlikely. More likely, you would have to scour to locate a Digital Native in the modern world who is not captivated by at least a few Digital Habitat elements and are enthusiastically dragging their antecedents, the Digital Immigrants, along with them in their

journey. As a Digital Immigrant, it would be imperious to ignore the impact these Digital

Habitats are having on Digital Native educators and their professional practices. We are

beholden to the future generations to continue to learn, assist and lead in the instructional

technology world. More research is always warranted on the transformative nature of technology

and how it is impacting the future of the field of education.

References

Abramovich, S., & Schunn, C. (2012). Studying teacher selection of resources in an ultra large scale interactive system: Does metadata guide the way? *Computers and Education, 58*(1).

Abramovich, S., Schunn, C. D., & Correnti, R. J. (2013). The role of evaluative metadata in an online teacher resource exchange. *Educational Technology Research and Development, 61*(6).

Albion, P. R. (2008). Web 2.0 in teacher education: Two imperatives for action. *Computers in the Schools.* 25(3-4): 181-198.

Alharami, R. Y. (2016). The role of twitter hashtags in the gulf states. Qatar University.

Apple (2019). Apple: App store principles and practices. Retrieved on September 5, 2019 from https://www.apple.com/ios/app-store/principles-practices/

Arakji, R., Benbunan-Fich, R., & Koufaris, M. (2009). Exploring contributions of public resources in social bookmarking systems. *Decision Support Systems, 47.* 245-253.

Archambault, L., Wetzel, K., Foulger, T. S., & Williams, M. K. (2010). Professional Development 2.0: Transforming teacher education pedagogy with 21st century tools. *Journal of Digital Learning in Teacher Education.* 27(1): 4-11.

Archibald, S., Coggshall, J. G., Croft, A., & Goe, L. (2011). High-quality professional development for all teachers: Effectively allocating resources. Research & Policy Brief.

National Comprehensive Center for Teacher Quality. Retrieved from

http://files.eric.ed.gov/fulltext/ED520732.pdf .

Barbour, M., & Pough, C. (2009). Social networking in cyber schooling: Helping to make

online learning less isolating. *Tech Trends: Linking Research and Practice to Improve*

Learning. 53(4), 56-60. DOI: 10. 1007/s11528-009-0307-5

Barrett, D. E., Casey, J., Visser, R. D., & Headley, K. N. (2012). How do teachers make

judgments about ethical and unethical behaviors? Toward the development of a code of

conduct for teachers. *Teaching and Teacher Education, 28*(6), 890–898.

Basso, M. (2008). 2018: Digital Natives grow up and rule the world. Retrieved October 8, 2018

from:

http://www. Esearchhawaii.com/cms/uploads/articles/Digital_natives_grow_up

Bauman, S. & Tatum, T. (2009). Web sites for young children: Gateway to online social

networking? *Professional School Counseling 13*(1), 1-10.

Beach, R. (2012). Can online learning communities foster professional development? *Language*

Arts, 89(4), 256–262.

Bickmore, D. L. (2012). Professional learning experiences and administrator practice: Is there a

connection? *Professional Development in Education, 38*(1), 95–112.

Bockler, A., Herrmann, L., Trautwein, F. M., Holmes, T. & Singer, T. (2017). Know thy

selves: Learning to understand oneself increases the ability to understand others. *Journal*

of Cognitive Enhancement. 1: 197-209

Booth, S. (2007). Groups, groupings and taming my buddy list. And Twitter. *Climb to the Stars.*

Retrieved on October 1, 2019 from

http://climbtothestars.org/archives/2007/05/04/groups-groupings-and-taming-my-buddy-

list-and-twitter/

Boyd, S. (2007). Hashtags = Twitter groupings. Retrieved on September 12, 2019 from

https://stoweboyd.com/post/39877198249/hash-tags-twitter-groupings#_=_

Brady, K. P., Holcomb, L. B., & Smith, B. V. (2010). The use of alternative social networking

sites in higher education settings: A case study of the e-learning benefits of Ning in

education. *Journal of Interactive Online Learning, 9*(2). Retrieved from

http://www.ncolr.org/jiol

Britannica (2019). The WELL. Retrieved on September 1, 2019 from :

https://www.britannica.com/topic/The-WELL-Internet-community

Brookfield, S. D. (1982). *Independent adult learning*. Nottingham, UK: University of

Nottingham, Department of Adult Education.

Brookfield, S. D.,ed. (1984). *Self-directed learning: from theory to practice*. San Francisco,

CA: Jossey-Bass.

Brookfield, S. D. (2000). *Education and self-directed learning*. In: Matheson, C.; Matheson, D., eds. Educational issues in the learning age. New York, NY: Continuum.

Burns, R. (2002). *The adult learner at work: A comprehensive guide to the context, psychology and methods of learning for the workplac*e. Allen and Unwin (2nd edition).

Carpenter, J. P. (2014). Twitter's capacity to support collaborative learning. *International Journal of Social Media and Interactive Learning Environments. 2* (2). 103-118.

Carpenter, J. P. & Krutka, D. G. (2014). How and why educators use Twitter: A survey in the field. *Journal of Research on Technology in Education. 46* (4). 414-434.

Casidy, R. (2013). The role of brand orientation in the higher education sector: A student perceived paradigm. *Asia Pacific Journal of Marketing and Logistics, 25*(5), 803–820.

Charles, A. S. (2012). Cell phones: Rule-setting, rule-breaking, and relationships in classrooms. *American Secondary Education, 40*(3), 4-16

Chen, B. & Bryer, T. (2012). Investigating instructional strategies for using social media in formal and informal learning. *The International Review of Research in Open and Distributed Learning*. 13(1)

Constantinides, E., & Zinck Stagno, M. C. (2011). Potential of the social media as instruments of higher education marketing: A segmentation study. *Journal of Marketing for Higher Education, 21*(1), 7–24.

Coombs, D., Leite, J., & Grierson, S. (2010). Opening Pandora's box: Social networks in the classroom of 2010. *Kentucky English Bulletin, 59*(2), 14-18.

Cohen, L., Manion, L., & Morrison, K. (2018). *Research methods in education* (8th edition). New York: Routledge.

Creswell, J. (2012). *Educational research: Planning, conducting, and evaluating quantitative and qualitative research* (4th ed.). Boston, MA: Pearson Education.

Guba, E. G. (1990). The paradigm dialog. Appalachian State University. Boone, NC.

Creswell, J. W. (2014). *Research design: Qualitative, quantitative and mixed methods approaches.* 4th Edition. Thousand Oaks, CA: Sage Publications, Inc

Czerkawski, B. C. (2013). Strategies for integrating emerging technologies: Case study of an online educational technology master's program. *Contemporary Educational Technology 4*(4). 309-321.

Darling-Hammond, L., Hyler, M. E., & Gardner, M. (2017). Effective professional development. Research brief. Palo Alto, CA: Learning Policy Institute. Retrieved from https://learningpolicyinstitute.org/sites/default/files/product-files/Effective_Teacher_Professional_Development_BRIEF.pdf.

Daves, D. P. & Roberts, J. G. (2010). Online teacher education programs: social connectedness and the learning experience. Journal of Instructional Pedagogies. 1-9

Dawidowicz, P. (2010). *Literature reviews made easy: A quick guide to success.* Walden University. Information Age Publishing, Inc. Charlotte, NC.

Dedoose. (2019). Http://www.dedoose.com

Degreff, J. (2014). Digital Natives vs. Digital Immigrants. *Huffington Post.* Retrieved from

    https://www.huffpost.com/entry/digital-natives-vs-digita_b_5499606

DeGusta, M. (2012). Are smart phones spreading faster than any technology in human history?

    MIT Technology Review.

De Souza, J. & Dick, G. (2008). Information disclosure on MySpace-the what, the why and the

    implications. *Pastoral Care in Education, 26*, 143-157. DOI: 10.

    1080/02643940802246427

Docekal, V. & Tulinska, H. (2015). The impact of technology on education theory. *Procedia-*

    Social and Behavioral Sciences, 174. 3765-3771.

Doering, A., Lewis, C., Veletsianos, G., & Nichols-Besel, K. (2008). Preservice teachers'

    perceptions of instant messaging in two educational contexts. *Journal of Computing in*

    Teacher Education. 25(1): 5-12.

Downes, S. (2006). *Learning Networks and Connective Knowledge*.

    http://it.coe.uga.edu/itforum/paper92/paper92.html.

Downes, S. (2008). Places to Go: Connectivism & Connective Knowledge. *Innovate Online.*

    5(1). Accessed August 20, 2019:

    http://www.innovateonline.info/pdf/vol5_issue1/Places_to_Go-

    Connectivism&_Connective_Knowledge.pdf .

Downes, S. (2010). New technology supporting informal learning. *Journal of Emerging Technologies in Web Intelligence*, 2(1), 27-33.

Drexler, W., Baralt, A., & Dawson, K. (2008). The teach web 2.0 consortium: A tool to promote educational social networking and web 2.0 use among educators. *Educational Media International 45*(4), 271-283 DOI: 10. 1080/09523980802571499

Druckenmiller, D. A. & Mittleman, D. (2015). A design theory for digital habitats: Building virtual communities of practice. 48th *Hawaii International Conference on System Sciences*. (p. 571-578).

Elkind, D. (2004). The Problem with Constructivism. *Educational Forum* 68: 306–312.

Fan S. & Radford, J. (2016). GPaedia: A Web 2. 0 technology enhanced digital habitat to support the general practice learning community. Focus Health Prof Educ. 2015;16(3):3–15.

Fan, S., Radford, J., & Fabian, D. (2016). A mixed methods research to investigate the adoption of mobile devices and Web2.0 technologies among medical students and educators. *BMC Medical Informatics and Decision Making.16*:43 DOI: 10.1186/s12911-016-0283-6

Forbes, D. (2017). Building Connections: Professional online presence and learning networks. *Educating for the Ethical Use of Social Media*. 18 (7). University of Waikato, New Zealand.

Foulger, T. S., Williams, M. K., & Wetzel, K. (2008). We innovate: The role of collaboration in exploring new technologies. *International Journal of Teaching and Learning in Higher Education, 20*(1), 28-38.

Fullan, M. (1993). *Change forces: Probing the depths of educational reform*. New York: The Falmer Press.

Fullan, M. & Stiegelbauer, S. (1991). *The meaning of educational change. (*2nd Edition). New York: Teachers College Press.

Galvan, C. & Parker, M. (2011). Investigating the reciprocal nature of service-learning in physical education teacher education. *Journal of Experiential Education.* 34(1): 55-70

Gibbs, G. R. (2007). Analyzing qualitative data. *The Sage qualitative research kit*. London: Sage.

Gikas, J. & Grant, M. (2013). Mobile computing devices in higher education: Student perspectives on learning with cell phones, smartphones and social media. *The Internet and Higher Education, 19*. 18-26.

Gladwell, M., (2008). *Outliers*: *the story of success*. New York: Little, Brown and Company.

Green, H., & Hannon, C. (2007). Young people are spending their time in a space which adults find difficult to supervise or understand. London. Retrieved October 8, 2018 from: https://www.demos.co.uk/files/Their%20space%20-%20web.pdf

Greenhow, C. & Robelia, E. (2009). Informal learning and identity formation in online social

networks. *Learning, Media and Technology*, **34**(2), 119–140.

Grote-Garcia, S. & Vasinda, S. (2014). Pinning and Practice: Using Pinterest as a tool for
developing pedagogical content knowledge. *Texas Journal of Literacy Education. 2*(1)
36-45

Gunawardena, C. N., Harmans, M. B., Sanchez, D., Richmond, C., Bohley, M., & Tuttle, R.
(2008). A theoretical framework for building online communities of practice with social
networking tools. *Educational Media International*. 46(1): 3-16.

Guskey, T. R. (1991). Enhancing the effectiveness of professional development programs.
Journal of Educational and Psychological Consultation. 2(3): 239-247.

Guskey, T. R. (2002). *Professional development and teacher change. Teachers and teaching*.
8(3): 381-391 DOI: 10.1080/135406002100000512

Guskey, T. R. (2009). Closing the knowledge gap on effective professional development.
Educational Horizons, 87(4), 224–233.

Guskey, T. R. (2016). Gauge impacts with 5 levels of data. *Learning Forward*.

Gustafson, B. (2015). A Phenomenological Study of Professional Development in the Digital
Age: Elementary Principal' Lived Experiences. ProQuest

Hafner, K. (2001). *The WELL: A story of love, death and real life in the seminal online
community*. Carrol and Graf Publishing.

Hansen, K., Nowlan, G., & Winter, C. (2012). Pinterest as a tool: Applications in academic

    libraries and higher education. Partnership: *The Canadian Journal of Library and*

    Information Practice and Research. 7(2). 1-11.

Harvey, J. (2013). Teachers increase use of social media as a learning tool. *Technician Online*.

    Retrieved from http://www.technicianonline.com/article_b3191dc8-45d7-11e3-8edc-

    0019bb30f31a.html

Hew, K. F. & Hara, N. (2007). Empirical study of motivators and barriers of teacher online

    knowledge sharing. *Educational Technology Research and Development.* 55. 573-595

Hickman, C. J. (2015). Strengths and limitations of a qualitative research design from the

    perspective of a Ph.D. student. Walden University.

Howe, N., & Strauss, W. (2000). Millennials rising: The next great generation. New York:

    Vintage Books.

Howe, N., & Strauss, W. (1993). 13th gen: Abort, retry, ignore, fail? New York: Vintage Books

Hussey, C. (2013). A teacher's perspective on Pinterest. *Edudemic*.

    http://edudemic. com/2013/02/a-teachers-perspective-on-Pinterest/

Irvine, T. M. (2015). Pinned: A qualitative study of teacher experiences of interfacing with

    online resources for lesson planning. Capella University. ProQuest: 3721119

Johnson, L., Adams Becker, S., Estrada, V., & Freeman, A. (2014). *NMC Horizon report: 2014*

    Higher education edition. Austin, Texas: The New Media Consortium

Johnson, David Walcott, & Roger T. Johnson. (1994). *Learning together and alone:*

    Cooperative, competitive, and individualistic learning, 5th ed. Boston, MA: Allyn and

    Bacon.

Jonassen, D. H. (2000). *Computers as mindtools for schools: Engaging critical thinking*, 2nd ed.

    Upper Saddle River, NJ: Merrill.

Jones, J. (2017). Perceptions in a changing world: Teachers' attitudes toward the implementation

    of educational innovations. Kennesaw State University: Doctor of Education in Teacher

    Leadership Dissertations. Retrieved from:

    https://digitalcommons.kennesaw.edu/teachleaddoc_etd/18

Joos, M. (1961). *The Five Clocks*, New York: Harcourt, Brace and World.

Kabilan, M. K. (2005). Online professional development: A literature analysis. *Journal of*

    Computing in Teacher Education, 21(2), 51–59.

Kabilan, M., Adlina, W., & Embi, M. (2011). Online collaboration of English language teachers

    for meaningful professional development experiences. *English Teaching: Practice and*

    Critique, 10(4), 94–115.

Kearsley, G. & Shneiderman, B. (1998). Engagement Theory: A Framework for Technology-

    Based Teaching and Learning. *Educational Technology, 38*(5), 20-23. Retrieved from

    https://eric.ed.gov/?id=EJ573955

Kennedy, A. M. (2017). Teacher perceptions of school-based and district professional

    development. Kennesaw State University. Kennesaw, Georgia. Retrieved from

    http://digitalcommons.kennesaw.edu/teachleaddoc.etd/17

Kemp, S. (2019). Digital 2019: Global internet use accelerates. *We Are Social*. Retrieved on

    August 25, 2019 from https://wearesocial.com/blog/2019/01/digital-2019-global-internet-

    use-accelerates

Kimmons, R., Carpenter, J. P., Veletsianos, G., & Krutka, D. G. (2018). Mining social media

    divides: An analysis of K-12 US school uses of Twitter. *Learning, Media and*

    Technology, 43(3): 307-325. https://doi.org/10.1080/17439884.2018.1504791

King, V. E. (2017). A little birdy told me: Educators' experiences with Twitter as a professional

    learning network. Kennesaw State University. Kennesaw, Ga. Retrieved from:

    http://digitalcommons.kennesaw.edu/teachleaddocetd/16

Kite, S. L., Gable, R. K., & Filippelli, L. (2010). Assessing middle school students' knowledge

    of conduct/consequences and their behaviors regarding the use of social networking sites.

    The Clearing House, 1939-912X, 83,158-163

Knight, J. (2000). Another damn thing we have to do: Teachers' perceptions of professional

    development. Presented at Annual Meeting of the American Educational Research

    Association (New Orleans, LA). Retrieved from:

    http://files.eric.ed.gov/fulltext/ED444969.pdf

Knowles, M. (1973). *The Adult Learner: A Neglected Species.* American Society for Training
 and Development. Gulf Publishing Company. Houston, Texas.

Knowles, M. S., Holton III, E. F., & Swanson, R. A. (1998). *The Adult Learner: The definitive
 classic in adult education and human resource development.* Gulf Publishing Company.
 Houston, Texas

Kop, R. (2011). The challenges to connectivist learning on open online networks: Learning
 experiences during a massive open online course. *International Review of Research in
 Open and Distance Learning* 12: 19–38.

Kram, K. E. (1983). Phases of the mentor relationship. *Academy of Management Journal.
 26*(4). 608-625

Krikorian, R. (2017). New Tweets per Second Record, and How! Twitter Blog. Retrieved on
 November 8, 2017: https://blog.twitter.com/engineering

Kukulska-Hulme, A. & Shield, L. (2008). An overview of mobile assisted language learning:
 From content delivery to supported collaboration and interaction. *ReCALL, 20*(3), pp.
 271–289.

Labone, E., & Long, J. (2016). Features of effective professional learning: A case study of the
 implementation of a system-based professional learning model. Professional
 Development in Education, 42(1), 54–77.

Lancaster, L. C., & Stillman, D. (2002). *When generations collide. Who they are. Why they
 clash. How to solve the generational puzzle at work*. New York: Collins Business.

Learning Forward. (2011). Standards for Professional Learning. Oxford, OH

Lichtman, M. (2013). *Qualitative research in education: a user's guide*. Los Angeles London: SAGE Publications.

Lips, A. (2018). History of Hashtags: How a symbol changed the way we search and share. *Social Media Week.* Retrieved on September 13, 2019 from https://socialmediaweek.org/blog/2018/02/history-hashtags-symbol-changed-way-search-share/

Lock, J. V. (2006). A new image: Online communities to facilitate teacher professional development. *Journal of Technology and Teacher Education, 14*(4), 663–678

Lui, Z., Jiang, Y., Chen, G., Wu, S., Chen, R., & Guan, C. (2011). Applications of constructivism theory explore electronic technology design course teaching. 216, 299-302.

Lupton, D. (2014). Feeling better connected: Academics' use of social media. University of Canberra, Canberra: News and Media Research Centre.

Madge, C., Meek, J., Wellens, J., & Hooley, T. (2009). Facebook, social integration and informal learning at university: It is more for socializing and talking to friends about work than for actually doing work. *Learning, Media and Technology, 34*(2): 141-155.

Mancabelli, R., & Richardson, W. (2011). Personal learning networks: Using the power of connections to transform education. Bloomington, IN: Solution Tree Press.

Marsick, V. J, & Watkins, K. E. (1990). *Informal and incidental learning in the workplace*.

London, UK: Routledge.

Martin, C. A., & Tulgan, B. (2002). Managing the generational mix. Amherst, MA: HRD Press.

Martin, C. A., & Tulgan, B. (2001). Managing generation Y. Amherst, MA: HRD Press.

Maxwell, J. A. (1996). *Qualitative Research Design: An interactive approach*. Thousand Oaks,

CA: SAGE Publications, Inc.

McKenzie, J. (2007). Digital nativism, digital delusions and digital deprivation. *The Educational

Technology Journal.* 17(2) Retrieved on October 31, 2019 from :

http://fno.org/nov07/nativism.html

Merriam, S. B. A. (2002). *Qualitative research in practice: Examples for discussion and

analysis* (1st ed.). San Francisco, CA: Jossey-Bass.

Messina, C. (2007). Groups for Twitter: A proposal for Twitter tag channels. Retrieved on

September 12, 2019 from:

http://web.archive.org/web/20071012011500/http://factoryjoe.com/blog/2007/08/25/grou

ps-for-twitter-or-a-proposal-for-twitter-tag-channels/

Messner, K. (2012). Very Pinteresting! The hot social network is taking educators by storm.

The Digital Shift

http://www.thedigitalshift.com/2012/07/social-media/very-pinteresting-the-hotsocial-

network-thats-a-virtual-bulletin-board-is-taking-educators-by-storm/

Miller, R. J., Goddard, Y. L., Goddard, R., Larsen, R., & Jacob, R. (2010, November 17–20). Shared instructional leadership: A pathway to teacher collaboration and student achievement. A paper presented at the *University Council for Educational Administration Convention* (UCEA), Pittsburgh, PA.

Moore, J. (2006). The teacher education division and systemic change. *Tech Trends*. 50 (2) p.18-19.

Oblinger, D., & Oblinger, J. (Eds.). (2005). Educating the Net Gen. Washington, DC: EDUCAUSE.

Oliver, P. (2012). *Succeeding with your literature review: A handbook for students.* McGraw-Hill Education. New York, NY.

Ooi, K. B., Hew, J. J., & Lee, V. H. (2018). Could the mobile and social perspectives of mobile social learning platforms motivate learners to learn continuously? *Computers in Education. 120*. 127-145

Orchard, L. M. (2007). Sticky tags for Twitter?. Retrieved on October 1, 2019 from https://decafbad.com/blog/2007/08/21/sticky-tags-for-twitter/

Palfrey, J. & Gasser, U. (2008). *Born Digital: Understanding the first generation of digital natives*. New York, NY: Basic Books

Palmer, J. A. (2001). *Fifty modern thinkers on education: From Piaget to the Present*. Routledge Press. New York, NY

Patton, M. Q. (2002). *Qualitative research & evaluation methods* (3rd ed.). Thousand Oaks, CA: Sage.

Payne, R. K. (2005). *A framework for understanding poverty* (4th rev. ed.). Highlands, Tex.:

   Aha! Process.

Payne, R. K., DeVol, P. E., & Smith, T. D. (2001). Bridges out of poverty: strategies for

   professionals and communities. Highlands, TX: Aha! Process, Inc.

Pearce, N. (2013). Learning beyond the classroom: Evaluating the use of Pinterest in learning

   and teaching in an introductory anthropology class. *Journal of Interactive Media in*

   Education.

Pellegrino, J. W., Goldman, S. R., Betenthal, M., & Lawless, K. (2007). Teacher education and

   technology: Initial results from the "What words and why project", *Yearbook of the*

   National Society for the Study of Education, 106(2), 52-86 DOI: 10. 1111/j. 1744-7984

Perry, B. & Edwards, M. (2010). Interactive teaching technologies that facilitate the

   development of online learning communities in nursing and health studies. *Teacher*

   Education Quarterly, Special Online Edition. Retrieved from: http://teqjoumal.

   org/perry_edwards. html

Piki, A. (2017). Learner engagement in mobile computer-supported collaborative learning

   contexts: An integrative framework. Proceedings of the 16th World Conference on

   Mobile and Contextual Learning. University of Cyprus, New York, NY.

Pilgrim, J. & Bledsoe, C. (2011). Engaging pre-service teachers in learning through social

   networking. *Journal of Literacy and Technology, 12*(1), 2-25.

Pinterest (2019). www.pinterest.com

Polly, D., & Moore, J. A. (2008). The great divide: Preparing pre-service teachers to integrate technology effectively. In M. Orey, V. J. McClendon, R. M. Branch (Eds.), 2008 *Educational media and technology yearbook*, (pp. 17-31). Santa Barbara, CA: Greenwood.

Postman, N. (1995). *The end of education: Redefining the value of school*. New York: Knopf.

Poulin, M. T. (2014). Social networking tools and teacher education learning communities: A case study. Northcentral University Dissertation. Prescott Valley, Arizona.

Prensky, M. (2001a). Digital natives, digital immigrants. *On the Horizon*. NCB University Press, 9(5).

Prensky, M. (2001b). Digital natives, digital immigrants, part II: Do they really think differently? *On the Horizon*. NCB University Press, 9(6).

Prensky, M. (2006). *Don't bother me mom- I'm learning*. Paragon House. St. Paul, MN.

Preston, J. (2011). Rules to stop pupils and teachers from getting too social online. *The New York Times*. Retrieved on September 17, 2019 from https://www.nytimes.com/2011/12/18/business/media/rules-to-limit-how-teachers-and-students-interact-online.html

Ramos, F. & Fernández-Diego, M. (2013). Using Pinterest in education: A collaborative collection of marketing ads. Universidad Politécnica de Valencia: Spain.

Reeves, T. C., & Oh, E. J. (2007). Generation differences and educational technology research. In J. M. Spector, M. D. Merrill, J. J. G. van Merriënboer, & M. Driscoll. (Eds.) *Handbook of research on educational communications and technology* (pp. 295-303). Mahwah, NJ: Lawrence Erlbaum Associates.

Roberts, D. F., Foehr, U. G. & Rideout, V. (2005). Generation M- Media in the lives of 8-18-year-olds. *Kaiser Family Foundation Study.* Stanford University Press.

Rogers, C. R. (1967). A plan for self-directed change in an educational system. *Educational Leadership.* 717-736

Rosenberg, J. M., Greenhalgh, S. P., Koehler, M. J., & Akcaoglu, M. (2016). An investigation of State Educational Twitter Hashtags (SETHs) as affinity spaces. *SAGE Journals*. 13: (1-2), 24-44. https://doi. org/10. 1177/2042753016672351

Russo, A. & Watkins, J. (2006) Establishing and maintaining cultural e-communities. *WSEAS Transactions on Advances in Engineering Education*. 3 (1): 27-33.

Rutter, R., Roper, S., & Lettice, F. (2016). Social media interaction, the university brand and recruitment performance. *Journal of Business Research 69*: 3096-3104

Salzmann-Erikson, M. & Eriksson, H. (2018). PhD students' presenting, staging and announcing their educational status- An analysis of shared images in social media. *Computers and Education* 116: 237-243

Sarason, S. (1982). *The culture of school and the problem of change. (*2nd Edition). Boston: Allyn and Bacon.

Scherff, L. (2018). Distinguishing professional learning from professional development. *Regional Educational Library*. Retrieved September 10, 2019 from

   https://ies.ed.gov/ncee/edlabs/regions/pacific/blogs/blog2_DistinguishingProfLearning

Siemens, G. (2004). Connectivism: A learning theory for the digital age. *International Journal of Instructional Technology and Distance Learning*, 2(1), 3-10.

Siemens, G. (2005). Connectivism: Learning as network creation. Learning Circuits, Connecting.

   http://www.learningcircuits.org/2005/nov2005/seimens.htm

Siemens, G. (2006). *Knowing Knowledg*e. Vancouver, BC, Canada: Lulu Press.

Siemens, G. (2017). Connecting. Complicity: An international journal of complexity and education. 4(1), 107-109.

Seaman, J., & Tinti-Kane, H. (2013). Social media for teaching and learning. *Pearson Social Media Survey 2013*, 1-34. New York, NY: Pearson Learning Systems.

Shenton, A. K. (2004). Strategies for ensuring trustworthiness in qualitative research projects. *Education for Information, 22*(2), 63-75.

Shillingstad, S. L., McGlamery, S., Davis, B., & Gilles, C. (2015). Navigating the roles of leadership: Mentors' perspectives on teacher leadership. *Delta Kappa Gamma Bulletin, 81* (2), 12.

Silvers, P., O'Connell, J., & Fewell, M. (2007). Strategies for creating community in a graduate education online program. *Journal of Computing in Teacher Education, 23*(3). Retrieved from http://www.ISTE.org

Soderholm, G. W., Bertsch, A., Sawe, E., Lee, D., Wolfe, T., Meyer, J., Engle, J. & Fatilua, U.

N. (2018). Who trusts social media? *Computers in Human Behavior. 81*. 303-315.

Stake, R. (1995). *The art of case study research.* Thousand Oaks, CA: Sage.

Stake, R. E. (2005). *Qualitative case studies: The Sage handbook of qualitative research* (pp.

443-466). Thousand Oaks, CA, Sage Publications Ltd.

Stake, R. E., (2010). *Qualitative research: Studying how things work.* New York: The Guilford

Press.

Statista. (2019). Active Pinterest app users in the United States as of July 2019. Retrieved on

August 31, 2019 from https://www.statista.com/statistics/318823/pinterest-use-usa/

Stevens, K. (2014). Twitter exec reports that educators dominate the Twitter-sphere. *EdSurge*.

Retrieved on August 25, 2019 from https://www.edsurge.com/news/2014-04-30-twitter-

exec-reports-that-educators-dominate-the-twitter-sphere

Tang, Y. & Hew, K. F. (2017). Using Twitter for education: Beneficial or simply a waste of

time? *Computers in Education. 106*. 97-118.

Tapscott, D. (1998). *Growing up digital: The rise of the Net Generation.* New York City, NY:

McGraw-Hill.

Tapscott, D. (2009). *Grown up digital: How the Net Generation is changing your world*. New

York City, NY: McGraw-Hill

Taranto, G., Dalbon, M., & Gaetano, J. (2011). Academic social networking brings web 2. 0

    technologies to the middle grades. *Middle School Journal, 42*(5), 12-19.

Tesch, R. (1990). *Qualitative research: Analysis types and software tools.* New York: Falmer

Thomas, M. (2011). *Deconstructing Digital Natives: Young people, technology and the new*

    literacies. New York: Routledge.

Thota, N. (2015). Connectivism and the use of technology / media in collaborative teaching and

    learning. *New Directions for Teaching and Learning*. 142. Summer 2015. DOI:

    10.1002/tl.20131

Trust, T. (2012). Professional learning networks designed for teacher learning. *Journal of*

    Digital Learning in Teacher Education, 28(4), 133–138.

Trust, T., Carpenter, J. P., & Krutka, D. G. (2017). Moving beyond silos: professional learning

    networks in higher education. *The Internet and Higher Education. 35*. 1-11

United States Census Bureau. (2019). Data tools and apps. United States Government. Retrieved

    on August 25, 2019 from https://www.census.gov/data/data-tools.html

Van De Bogart, K. L., Dounas-Frazer, D.R., Lewandowski, H.J., & Stetzer, M.R. (2017).

    Investigating the role of socially mediated metacognition during collaborative

    troubleshooting of electric currents. *Physical Review Physics Education Research.* 13 (2)

Visser, R. D., Evering, L. C., & Barrett, D. E. (2014). #TwitterforTeachers: The implications of Twitter as a self-directed professional development tool for K-12 teachers. *Journal of Research on Technology in Education. 46* (4): pp. 396-413.

Vitala, A. (2016). From #edcamp to #edchat: A case study exploring innovative, self-directed educator professional learning. Kennesaw State University: Doctor of Education in Teacher Leadership Dissertations. Retrieved from:

https://digitalcommons.kennesaw.edu/teachleaddoc_etd/13

Vygotsky, L. S. (1978). *Mind and society: The development of higher mental processes*. Cambridge, MA: Harvard University Press.

Wang, S. S. (2013). "I share, therefore I am": Personality traits, life satisfaction, and Facebook check-ins". *Cyberpsychology, Behavior, and Social Networking, 16*(2), 870–877.

Wenger, E., White, N., & Smith, J. D. (2009). *Digital Habitats: Stewarding Technology for Communities.* CP square Publishing

Wright, N. (2010). Twittering in teacher education: Reflecting on practicum experiences. *Open Learning, 25*(3), 259-265. DOI: 10.1080/02680513.2010.512102

Yin, R. K. (2002). C*ase study research: Design and methods*. 3rd edition. Volume 5. Thousand Oaks, CA: Sage Publications

Young, S. (2008). Parental influence and teens' attitudes toward online privacy protection. *The Journal of Consumer Affairs.* 42, 362-388.

Zemke, R., Raines, C., & Filipczak, B. (2000). *Generations at work: Managing the class of veterans, boomers, x-ers, and nexters in your workplace*. New York: AMACON

Zula, K., Yarrish, K., & Pawelzik, W. (2011). An analysis of the differences between student age and social networking utilization within a school of business. *American Journal of Business Education. 4*(9), 37-42.

Zurita, G., Baloian, N., & Jerez, O. (2018). Exploring hashtags collaboratively to facilitate learning and knowledge construction. *2018 IEEE 18th International Conference on Advanced Learning Technologies*. Pages 160-162. DOI 10. 1109/ICALT. 2018. 00045

 Note: Digital Habitat usernames and specific blogs, websites and sources referenced by participants are kept confidential in order to protect participant anonymity.

Appendix A

Survey of Potential Participants

Digital Habitats in Education

My name is Kelly Cassidy and I am a doctoral student at Kennesaw State University conducting a research project for my dissertation in the EdD program in Instructional Technology. This survey will take about 5-10 minutes and will include questions about your demographics and experience with technology as an educator. If at any time during the survey you wish to leave a question unanswered, please feel free to do so. All of your responses are confidential. Your responses will remain confidential and will be used only for research and educational purposes.

At this time I would like to ask for your consent and also inform you that your continued participation in this survey also implies your consent. Your participation in this survey is completely voluntary. You may also withdraw your participation at any time without consequence. You may also contact me with any additional questions or concerns.

Kelly Cassidy
kcassid3@students.kennesaw.edu

ONLINE SURVEY CONSENT FORM
Title of Research Study: Hashtags & Pins: Digital Native Educators in Digital Habitats

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Introduction

You are being invited to take part in a research study conducted by Kelly Pilgrim Cassidy, Doctoral Candidate at Kennesaw State University. Before you decide to participate in this study, you should read this form and ask questions about anything that you do not understand.

Description of Project

The purpose of the study is gain a better understanding of digital interactions of educators and how these interactions may impact their professional practice.

Explanation of Procedures

Participants will be asked a series of survey questions about their experiences with technology as an educator. Those responses will then be used to identify participants who may meet criteria and be asked to participate in an additional interview. Completion of the survey does not obligate you to participate in the interview.

Time Required

Survey: 5-10 minutes

Risks or Discomforts

There are no known risks or anticipated discomforts in this study.

Benefits

Although there will be no direct benefits to the participants for taking part in the study, the participant and the researcher may learn more about the educator's interaction in digital habitats and how that affects their professional practice.

Confidentiality

The results of this participation will be confidential. After initial information is collected, each participant will then be identified by an alias and participant number. All information contributed will never be directly attributed to a participant in any published materials. All collected data will be safeguarded to ensure confidentiality.

Inclusion Criteria for Participation

Participants will be educators in a local school system.

You must be 18 years of age or older to participate in this study.

Use of Online Survey

Survey responses will only be used for participant selection and IP addresses will not be collected.

Research at Kennesaw State University that involves human participants is carried out under the oversight of an Institutional Review Board. Questions or problems regarding these activities should be addressed to the Institutional Review Board, Kennesaw State University, 585 Cobb Avenue, KH3417, Kennesaw, GA 30144-5591, (470) 578-6407.

PLEASE PRINT A COPY OF THIS CONSENT DOCUMENT FOR YOUR RECORDS, OR IF YOU DO NOT HAVE PRINT CAPABILITIES, YOU MAY CONTACT THE RESEARCHER TO OBTAIN A COPY

Please select one of the following: *

⦿   I agree and give my consent to participate in this research project. I understand that participation is voluntary and that I may withdraw my consent at any time without penalty.

○   I do not agree to participate and will be excluded from the remainder of the questions.

School _____ Gender_____ Race/ Ethnicity _____

Have you had education or training in any language other than English?

_____

During which time frame were you born?
Before 1975
1975-1980
1981-1985
1986-1990
1991-1995
1996-2000
After 2000

How long have you been in the field of education?
less than 5 years
6-10 years
11-15 years
16-20 years
21-25 years
26-30 years
more than 30 years

Digital Habitat

Your Digital Habitat as an Educator is all of the places that you visit or interact on with respect to your job as a teacher. It may be places that you visit often or even sporadically? To help you recall, I will give you some common teacher times of the year and tasks and ask about your digital habitat which might relate. Please feel free to be completely honest and know that your responses will remain confidential.

How much do you use online resources either in your professional learning or preparing lessons for your classroom?
not very much- less than 10%
Some 10-49 %
About half 50%
More than half 51- 75%
Most of my sources are online 75%
Pretty much everything I use is online 99%

Pre-Planning, Beginning of the School year: Do you use any of the following sites or services to help you prepare for the school year?
Twitter
Snapchat
LinkedIn
Pinterest
Voxer
Skype
Flipgrid
Instagram
Facebook
Teachers Pay Teachers
Youtube
Textbook Publisher Site
Blogs
Other:

Teaching during the year: Do you use any of the following sites or services for professional learning?
Twitter
Snapchat
LinkedIn
Pinterest
Voxer
Skype

Flipgrid
Instagram
Facebook
Teachers Pay Teachers
Youtube
Textbook Publisher Site
Blogs
Other:

Instruction with Students: Do you use any of the following sites or services to find lesson materials for instruction?
Twitter
Snapchat
LinkedIn
Pinterest
Voxer
Skype
Flipgrid
Instagram
Facebook
Teachers Pay Teachers
Youtube
Textbook Publisher Site
Blogs
Other:

Do you use hashtags?_____

Appendix B

Hashtags & Pins in Education: Digital Natives in Digital Habitats:

Initial Interview Protocol

Participant ID #_____

Date ____ / ____/ ____

Script:

Welcome and thank you for your participation today. My name is Kelly Cassidy and I am a doctoral student at Kennesaw State University conducting a research project for my dissertation in the EdD program in Instructional Technology. This interview will take about 30 - 45 minutes and will include questions about your experience, attitudes and beliefs about your digital habitat as an educator. I would like your permission to audio record this interview so that I may accurately document the information you convey. If at any time during the interview you wish to discontinue the use of the recorder or the interview itself, please feel free to let me know and we will stop. All of your responses are confidential. Your responses will remain confidential and will be used only for research and educational purposes.

At this time, I would like to ask for your verbal consent and also inform you that your participation in this interview also implies your consent. Your participation in this interview is completely voluntary. If at any time you need to stop, take a break, please let me know. You may also withdraw your participation at any time without consequence. Do you have any concerns or questions before we begin? Then, with your permission we will be begin the interview.

Demographic Questions: (This information may be already transcribed from the survey data)

Gender   _____ Male   _____ Female   _____other (please specify)

Race/ Ethnicity: To which race do you most closely affiliate? _____

Have you had education and training in any language other than English? _____

Possible Follow up-

Do you classify your current use of this language as:

Basic, Conversational or Fluent.

When were you born? If they volunteer a specific year, record it here _____

____Before 1980   ___ 1981-1985 ___1986- 1990   ___1991-1995 __1996-2000 ____
        After 2000

How long have you been in the field of education? (years) If they volunteer a specific number of
        year , record it here _____

____< 5   ___ 6 -10 ___11-15 ___ 16-20 ___ 21-25 ___ 26-30 ___> 30

There is no correct or incorrect answer but- how would you define Digital Habitat?

**If they have no idea or look uncomfortable- use the predetermined definition - something
        like "Your Digital Habitat as an Educator is all of the places that you visit or
        interact on with respect to your job as a teacher. It may be places that you visit
        often or even sporadically?**

**To help you recall, I will give you some common teacher times of the year and tasks and
        ask about your digital habitat which might relate. Please feel free to be completely
        honest and know that your responses will remain confidential.**

**So, Let's think about Pre-Planning or getting ready for the school year- Are there any
        online sites which you use?**

____ Twitter   ____ Snapchat   ____ Linked In   ____ Pinterest

____ Voxer Groups   ____ Skype   ____ Flipgrid   ____ Instagram

____ Blogging / Reading other's blogs   ____ Facebook   ____ Teacher Pay
        Teachers

Other: _____ Other: _____

Other: _____ Other: _____

What about for your own learning, site you visit to learn skills or get ideas about teaching ?

____ Twitter   ____ Snapchat   ____ Linked In   ____ Pinterest

____ Voxer Groups   ____ Skype   ____ Flipgrid   ____ Instagram

____ Blogging / Reading other's blogs   ____ Facebook   ____ Teacher Pay
        Teachers

Other: _____ Other: _____

Other: _____ Other: _____

When you are developing lessons or looking for ideas to use with students, where do you go?

____ Twitter   ____ Snapchat   ____ Linked In   ____ Pinterest

____ Voxer Groups   ____ Skype   ____ Flipgrid   ____ Instagram

____ Blogging / Reading other's blogs   ____ Facebook   ____ Teacher Pay
         Teachers

 Other: _____   Other: _____

Other: _____   Other: _____

Follow-up Questions might include:

Are there any that you are required to participate in by your schools?

Which (voxer/ facebook/ snapchat) group?

Which Twitter Chat?

Do you have a particular topic that you follow on Pinterest?

Do you have Pinterest Boards that are collaborative?

How often do you buy things on Teacher Pay Teachers?

What type of things do you buy?

Considering your answer to the above question, which sites or services do you use the most for teaching or your own learning?

Do you find Hashtags useful? Do you have specific hashtags that you use in your habitat? Are there any hashtags that you follow or search?

Do you find you use sites for personal and professional reasons at the same time?

Follow up: If so, which sites? Do you have separate accounts for social and professional use or do you use a single account? How does that look? Can you give me more information?

Are any of these sites especially influential on your skills as a teacher? Where do you find the most help for your professional learning?

Follow up- What do you find there? Is that usually the only place or are there other sources for new ideas?

Follow up- What makes you keep going back to those sources?

Are any of these sites especially influential on the lessons you develop as a teacher? Where do you find the most help for instruction?

Follow up- What do you find there? Is that usually the only place or are there other sources for new ideas?

Follow up- What makes you keep going back to those sources?

When you have a problem with technology, behavior or academics in your classroom, what sources do you use to reach out to for help?

Follow up- Why do you think you reach out to that group, website, etc?

In your experience, what role does peer sharing of ideas play in your work as an educator?

Follow up-

Can you tell me more about XXXX?

How do you feel XXX influences your teaching?

When you are visiting sites, what type of device are you using?

Does it vary based on the site you are visiting?

Is there anything that keeps you from participating in any particular social platform, website or educational interaction?

Are there limitations to what you can visit at school? How does this impact your access?

Can you give me an example of something you have found online that has been useful to you as a teacher?

Follow up: Did you use it just like you found it? Did you have to pay for it? Do you know if it was from another teacher or was it a company? Did you bookmark or save the source for later? How will you find it again?

Follow up: Would you be willing to share the link to that information? Did you develop a
      lesson using it or add it to an existing lesson. I would love to see how that looked in the
      classroom.

As we talked today, is there anything else that came to mind that you would like to share?

Appendix C

Hashtags & Pins in Education: Digital Natives in Digital Habitats:

Focus Group Protocol

Phase 1: Before the Focus Group

- 5 questions were developed based on the responses from the interviews, lesson documents and observations that I would like to discuss. Order questions from general to specific
- Invite participants and pick a time and location that is convenient for all
- Develop Script and gather and organize materials.

Phase 2: Leading the Focus Group

- Preparation:
- Arrive Early (10-15 min to set-up room, audio recorder and snacks)
- Bring Materials
  - Audio Recorder
    - List of Participants
    - Script
    - Timer/ Clock
  - Read over reminders about leading the focus group:
  - Reminders for How to Conduct the Focus Group Session
    - Positive Tone
    - Make sure everyone is heard - draw out quiet members
    - Probe for more complete answers
    - Monitor for time
    - Don't argue with participants
    - Thank participants

 Introduce myself and make sure they know they are being recorded

Script: Welcome to the focus group on digital habitats in education. You all were selected for this focus group based on the similar answers you gave in your survey responses. All of the information gathered here today will remain confidential and no names will be used. I want to make sure you are all ok and give your permission for me to record the group today.

Part 2: Questions- Probes and Follow-up Questions, Allow time for all participants to share and participate.

Part 3: Closing- Thank you so much for participating today. I wanted to make sure that you all have my contact information if you have any questions or want to follow-up on anything we talked about today. (Provide contact information on a card). I will be continuing to collect information over the next several months about educational digital habitat usage. I will analyze the data and include the information in my research at Kennesaw State University.

Phase 3: Interpreting and Reporting Results

1. Summarize the focus group by writing my insights and observations
2. Transcribe the Audio
3. Upload Audio into Dedoose
4. Code data

Appendix D

Hashtags & Pins in Education: Digital Natives in Digital Habitats:

Observation Protocol

Location:

Date:

Time:

Setting: :   Page _____ of _____

Case Study Participant ID # _____

Context of the Observation _____Length: _____
Sketch of the arrangement of the environment:

Time	Descriptive Notes	Reflective Notes