

Swipe-Technology's Influence in Born Digital Culture:
Redesigning Pedagogy in Early Childhood Education

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Abstract

This essay examines the ways in which technology defines and divides generations and considers how swipe-technology (touch-screen technologies) shape emerging learning styles. Specifically, it focuses on the research currently being investigated on how forms of digital literacy represent a radical shift, away from traditional forms of literacy (Prensky, 2001a, b; Frand, 2000; Prensky, 2001b; Tapscott, 1997; Franco, 2013; Plowman & McPake, 2013; Infante, 2014; Passey, 2014) and evaluates various claims made about the social consequences of such change. This paper emphasizes the impact that swipe-technology has on young children during early stages of their development and seeks to answer the following question: what are the consequences of digital language becoming the Born Digital's (Franco, 2013) primary form of expression? The paper draws on some traditional theories such as those of Mannheim (Kecskemeti, 1952) and Vygotsky (1929, 1962, 1978) to provide a broader contextualization. In so doing, it hopes to contribute to the dialogue about how educational institutions should be redesigned to accommodate new media technologies.

Chapter 1: Establishing the Research

1.1 Theoretical Framework

This essay builds on the works of several popular voices in the field of media studies including author Marc Prensky, who introduced the term 'Digital Natives' to the discussion about society's adaptation to new technology, and business executive Don Tapscott whose consulting firm has conducted extensive research into the impact of generational differences on institutions and markets as a result of technological advancements. It contextualizes their claims within a broader sociological context that includes Mannheim's theory of 'generational location', Morrisett's 'digital divide', and Cohen's notion of moral panic.

The influence of modern-day technology has a direct impact on children's learning and preschool education. The substance of this essay is founded on the theories of developmental psychologist Lev Semenovich Vygotsky. His zone of proximal development theory, which relates to children's cognitive development, is applied to modern technologies in present day. Vygotsky's schemes are some of the key roots in analyzing the data relative to swipe-technology.

The accumulated data from diverse fields is applied to early childhood experiences with swipe-technology in the digital age. Some preliminary discussion has been debated on this matter as research has been contradictory, suggesting that early exposure to swipe-technology can impact toddlers both positively and negatively. A thorough understanding of transformative learning styles and

cognitive development stimulation in young, digitized children, can help identify how this influences early childhood education.

1.2 Definitions and Terminology

There are several terms used in this essay that require explanation. The word 'generation' signifies "all people born around the same time period" (Editors of The American Heritage Dictionary, 2011). To discuss the generational differences (also known as generation gaps) that exist between children and their caregivers, some specific terminology will be employed. The term 'Net Generation' shall refer to the generational cohort that has collectively developed within a computer-based technological environment (Sandarsa & Morrison, 2007). A 'Digital Native' shall refer to a child brought up within a complete digitized and media-saturated world, while a 'Digital Immigrant' shall refer to those who have a foreign relationship with technology (Prensky, 2001a). In recent years, the term 'Born Digital' has been used to refer to a person that speaks 'digital' as a first language (Franco, 2013).

Many of what these terms indicate pertain to diverse learning styles existing within today's educational institutions. It is important to differentiate between what 'learning' and the 'education system' signify. The *Glossary of Education Reform* defines it this way, "...an education system comprises everything that goes into educating public-school students at the federal, state, or community levels" (2013, para. 2). Contributing elements include but are not limited to, teaching resources and learning materials (Glossary of Education Reform, 2013). The act of learning however, extends beyond the education system and is geographically limitless in that learning can be absorbed outside of a formal education system.

Lastly, the expression of 'swipe-technology' indicates a touch-screen device, which may include multi-touch options. Touch-screen is defined as "a touch-sensitive display screen on a computer or other electronic device: touching different portions of the screen with a finger or stylus will cause the device to take actions determined by a computer program" (Dictionary.com Unabridged, 2016). Multi-touch is technology that enables a surface to identify multiple points of contact (Computer Desktop Encyclopedia, 1981-2015). Swipe-technology and touch-screen technology are used interchangeably in this essay.

1.3 Methodology

A majority of my research was conducted using Ryerson University Library and Archives online database to explore whether the traditional language will be superseded by digital as the Born Digitals' primary form of communication. Content types include scholarly and peer-reviewed articles, journals, published papers, books, and eBooks. The search engine led me to appropriate sources within the most suitable fields of study; sociology, literacy, media theory, and early childhood education. Both hard-copy and digital resources employed, applied qualitative and quantitative research methodologies in their studies, including observations, case studies, surveys, and scholarly research. The information collected for this paper draws on several important themes, such as, generational differences, learning styles, and theories of childhood development.

1.4 Limitations of the Study

The criteria for the children examined in this paper are restricted to ages six and younger. This study does not take into consideration how children of different genders may be affected independently. As well, it does not address the role socioeconomic status plays in generations and cultures in accordance with a digitized lifestyle. Scholarly data demonstrates that swipe-technology's patterns and usage during a child's maturation varies within social class and economic status. Racial and cultural differences, as well as diverse community types (i.e. suburban, rural and urban) are not accounted for in this essay. Research is limited to middle and upper-class families, based on the presumption that technology is financially accessible and granted.

Chapter 2: Background of the Study

2.1 Establishing Generational Gaps

Generational gaps occur when something causes younger generations (i.e. children) to experience a conflict of interest with older generations (i.e. parents). In Karl Mannheim's 1923 essay *The Problem of Generations*, he suggests that generation gaps are a result of different experiences of historical events (Kecskemeti, 1952). Mannheim introduced the concept of 'generational location', the shaping of individuals through collective experiences, in which he connects both time and setting to that of one's age bracket. For instance, World War One shaped many individuals who experienced the war, ultimately differentiating them from generations who did not. Generational location expands the gap by creating contrasting beliefs, politics, and values between generations. Mannheim's pioneered work has identified this key phenomenon and led to subsequent research on generational differences.

The generational difference in question has been called the 'digital divide', a term coined by Lloyd Morrisett in the mid to late 1990s, which refers to a separation between the information-haves and have-nots (Hoffman, Novak, & Schlosser, 2001). Earlier, Stanley Cohen (1972) identified reasons for the growing generational gap resulting from the introduction of technology. He applied the term 'moral panic' to describe a threat to society's morals and standards that arise when a particular group gains exposure in the public eye. Although Morrisett's term 'digital divide' had not yet been established in the 1970's, Cohen's notion of moral panic parallels

with the digital divide since he distinguishes differences between generations that are foreign to technology and the digital youth at the time.

American writer and speaker Marc Prensky (2001a, b), studied the way students learn within formal education institutions. He suggested that people born between 1980 and 1994 are claimed to be Digital Natives, owing to the evolution of computers, video games, and the Internet during this time period. Digital Immigrants are therefore those who were born prior to 1980. Prensky's notion is supported by Mannheim's theory in that the Digital Native cohort experienced a collective technological boom, thereby creating a greater generational gap.

2.2 Technology's Influence on Generations

The idea of Digital Natives and Digital Immigrants was initially developed by Prensky in his 2001 article *Digital Natives, Digital Immigrants*, in which he concludes that American educators at the time were unable to successfully fulfill digitized students' learning requirements. Although, Prensky's research provides no description of new learning requirements. Prensky argues that new generations of learners are growing up in an environment dominated by information and communication technologies [ICTs]. Children who grow up in technology-rich cultures gain new and stimulating perspectives, allowing the Digital Natives to think and act differently than the Digital Immigrants. Prensky makes many references to differentiate between traditional and digital learning methodologies. For example, he claims that a traditional style of learning focuses on a single-minded approach, whereas a digital style of learning adopts a multimodal technique in which Digital Natives simultaneously interact with many media forms. Prensky (2001a) further

supports his assertion by comparing educators' perspectives with that of a Digital Native's. He assumes the role of a Digital Native when he says, "They wanted a slow academic pace, we wanted speed and urgency...They wanted written instructions; we wanted computer movies" (p. 5). Prensky's argument however, is not entirely persuasive because he fails to identify Digital Natives' learning requirements and it becomes unclear what changes need to be put into action (if any) to meet curriculum objectives.

Modernized students are active experiential learners who depend heavily on ICTs for retrieving data and interacting with others through various digital gateways (Frans, 2000; Prensky, 2001b; Tapscott, 1997). As a result, the Digital Immigrants, who lack familiarity with technology, face a growing gap between their learning styles and those of Digital Natives (Arafeh, Levin, Rainie, & Lenhart, 2002; Prensky, 2005)

Of central importance to the examination of this generational gap is the effect of Internet access. David Buckingham applies Morrisett's term 'digital divide' to describe the effect that new technologies (i.e. Internet) have in widening the gap between children's digitally enhanced lives outside of school and their experiences within the education system (Itō et al., 2010). In the book *The Digital Disconnect: The Widening Gap Between Internet Savvy Students and Their Schools*, the Internet is particular accused of widening the generational gap between Internet-savvy students and inexperienced Digital Immigrants, ultimately affecting students' ability to learn from their instructors (Arafeh et al., 2002).

Socioeconomic status also contributes to the digital divide by creating limitations and barriers to technology for households in the lower income bracket (Itō et al., 2010). Statistics show that “70 percent of teens living in households with an income of less than \$30,000 per year had Internet access in the home, whereas 99 percent of teens living in households with earnings of \$75,000 per year or more had such access” (Itō et al., 2010, p. 34). Although the youth that falls into the lower class are economically restricted, they can seek alternative resources for accessing technology by utilizing external locations, such as schools and libraries (Itō et al., 2010).

In Don Tapscott's 1997 book *Growing up Digital: The Rise of the Net Generation*, he coins the term 'Net Generation', in order to define the social and business impacts of a new digital generation. He emphasizes a significant transformation in generations that are surrounded by digital media (computers and the Internet) versus those that are not (1997). His later book, *Growing up Digital: How the Net Generation Is Changing Your World*, provides a date range for the Net Generation, in which he expresses that the Net Generation was born between 1977 and 1997 (2009). Tapscott (1997) describes this generation as “exceptionally curious, self-reliant, contrarian, smart, focused, able to adapt, high in self-esteem, and has a global orientation” (p. 2). It is important to note that he draws upon the way in which the latest generation gathers, accepts, and retains information. Tapscott provides validation to his claim by demonstrating children's fundamental preference for interactive media (such as the Internet), rather than broadcasting media (such as television). He examines television analytics and reveals a decline in

television viewers due to its restricted top-down hierarchical distribution system. This differs from the more preferred interactive media, which offers its users greater power and control. Tapscott (1997) believes that these unique characteristics differentiate the Net Generations' attitudes and learning approaches from those of past generations. However, Tapscott fails to consider generational location when classifying the Net Generation date range (1977-1997), which would have helped to explain the Net Generation experience and a widening of the technological generational gap. Furthermore, Tapscott does not account for the public release of the Internet in 1991. Given the Internet's revolutionary impact, it is plausible that those born at the beginning of his grouping would experience a much different technological upbringing versus those born at the end. Tapscott overlooks these differences in his investigation.

Despite differences in terminology, theorists Mannheim, Cohen, Prensky, and Tapscott, all argue that newer generations greatly differ from their predecessors. Many of these writers identify technology to be the leading cause for widening the pre-existing generational gap due to young people's immersion within available networks and digital technologies. Analyzing the differences and similarities between traditional and modern learning styles helps identify technology's momentous influences on child maturation.

According to Prensky (2001a, b), Digital Immigrants possess 'passive learning styles', whereby they naturally resort back to traditional practices, such as oral communication and written text in any given situation. This limitation is a result of technology being absent in their early stages of childhood development.

Prensky's interpretation of a passive learning style minimizes the focus of interactive technology.

Claims have been made that a digital upbringing influences children's learning styles (Arafeh et al., 2002; Cohen, 1972; Franco, 2013; Frand, 2000; Prensky, 2001a, b; Tapscott, 1997). Prensky concurs with this idea and declares that the new generations of students prefer instantaneous learning methods, reliance on communication technologies, and utilize techniques such as multitasking (2001a, b). In contrast to a Digital Immigrant's passive learning style, Prensky describes Digital Natives to be active experiential learners who depend on ICTs. He makes note of their natural capability for multi-tasking and preference for visuals (rather than text) and instant gratification (Prensky, 2001a, b). He believes these new learning methods support his hypothesis that Digital Natives' brains develop differently. He states, "Today's students are no longer the people our educational system was designed to teach" (Prensky, 2001a, p. 1). Prensky (2001a) believes young children are greatly affected by the vast exposure of digital space, which results in excessive interference with historical teaching methods in a classroom setting.

In *Understanding Digital Natives' Learning Experiences*, Claudio de Paiva Franco (2013) indicates that children's exposure to information and communication technologies gives the digital generation a completely new way of thinking and learning. Franco (2013) emphasizes the generation's innate ability to interact in a digital environment by stating, "...they use digital tools naturally, without contemplating how they work. Their brains switch spontaneously to the digital world. Digital technology comes naturally to this particular generation" (Digital

Native section, para. 4). Consequently, there are distinct differences with respect to the Digital Immigrants' generational mindset and those who grew up surrounded by digital technology. Prensky (2001b) believes this transition is due to the likelihood that Digital Natives' brains are "...physically different as a result of the digital input they received growing up (p. 1). Therefore, the Digital Natives' new mentality displays a cognitive evolution compared to previous learning habits (Franco, 2013).

The scholarly literature surveyed all claim that there are different generational relationships with technology that create conflict and division between generations. Jason L Frand claims that young people do not consider a computer to be classified as technology, supporting Prensky's idea that children are fluent in the digital language from living deep within a technological environment (Frand, 2000).

2.3 Investigations in the Digital Age

Thus far, the fundamental elements of generational conflict have been identified as rooted in differences of experience and in recent years, more specifically, in the technology that shapes these experiences. Having established technology's influence in widening the gap between generations, and the disconnect between generations in terms of norms and mindsets, one becomes aware of learning styles adopted by Digital Natives and the significant transformation when compared with the learning preferences of Digital Immigrants. In recent generations, increasingly younger cohorts are being exposed to technology. Given this trend, it is important to better understand the implications of children's engagement with swipe-technology because Born Digitals are directly interacting with touch-screen technologies during pre-linguistic developmental stages.

The recent technological advancements are affecting young children on a deeper level than a simplistic adjustment in a youth's learning style. Born Digitals are particularly impacted by modern technologies, given the fact that major cognitive developmental stages occur within the first five years. This causes a supreme change in the way that a Born Digital develops (Palfrey & Gasser, 2008; Watson & Pecchioni, 2011). Amalgamating this concept with the exponential progression of technology's trend, new communication methodologies are being consumed in situations where early exposure to digital technologies is experienced during or prior to a child's early cognitive developing stages. This subject matter has been increasingly gaining attention in recent years (Wilson, 2015) due to the consequential impacts it has on children and even its influence beyond children. Authority figures, such as parents and educators express concern for the generation developing within a digital era and how this will impact the future.

Digital communication tools have become intermingled with traditional language, thus resulting in different learning styles and capabilities between modern and older generations. The question now arises as to whether digital language will soon surpass traditional language as the dominant form of communication, and if so, how this shift will impact a child's developmental process and early childhood education systems. Educating individuals about this subject matter will help better predict future tendencies. Once possible impacts and effects are understood, appropriate measures can be implemented if necessary to address potential issues.

2.4 Swipe-Technologies

Touch-screen technology began to grow in popularity in 2007 as a result of the release of the first generation iPhone (Honan, 2007). The release by Apple Inc. revolutionized culture's relationship with technology through its innovative features, one of which included multi-touch (Cohen, 2007). In the subsequent four years, touch-screen technologies became extremely popular and generated high demand, dominating a total of 80 percent of revenues and 95 percent of units shipped in 2011 alone (Walker, 2012). Touch-screen devices are currently utilized nationally through various technologies, such as mobile tablets and smartphones.

Swipe-technology's expansion has initiated a new era as its status has surpassed 'trendy' and become 'normalized'. It is commonly utilized by toddlers due to its simplistic navigation and overall pleasurable experience. A vast amount of research is necessary in order to determine possible implications and contributory effects on young children's cognitive development.

In recent years, toddlers have been exposed to immense volumes of swipe-technology. Some theorists discuss moral panic and express concern considering young children's adaptation in a digital era. Various research suggests that if children are exposed to too much digital technology in early years of living it can provoke negative impacts in that the expression of verbal language and the development of interpersonal skills may be encumbered (Plowman, Stevenson, Stephen, & McPake, 2012).

According to Franco (2013), when a child is constantly engaged in a digital experience, they often receive immediate feedback confirming their knowledge and

understanding of a particular subject matter. In doing so, they are missing out on important information that would be received outside of the digital environment (Franco, 2013), possibly giving broader perspectives on a given subject matter. Thus, these students may lack the ability to think critically since they are focused on obtaining access to information and assume the feedback that is received through the digital experience is unquestionable (Lorenzo & Dziuban, 2006). Many have advised for minimal exposure between technology and preschoolers in order to prevent detrimental consequences (Plowman, McPake, & Stephen 2010). Young children's interactions with technologies are said to produce both short-term and long-term risks since their brains are not yet fully developed (American Academy of Pediatrics, 2010).

All concerns discussed above pose serious risks and consequences to our social beings and other forms of communication unless appropriate actions at this crucial stage are made to mitigate the potential downfalls. It is important to manage the transition to digital in order in order to provide the opportunity for children to thrive in the modern age.

Chapter 3: Presentation and Analysis of the Data

3.1 Theories of Childhood Development

Prensky's work (2001a, b) evidently demonstrates varying learning styles between a Digital Native and Digital Immigrant; however, one's attention should focus on the impacts of these changes in learning styles (derived from technological advancements), rather than merely the change itself. In order to understand how these impacts effect young children, it is essential to evaluate past, yet relevant, childhood development theories in relation to pre-linguistic technological exposure.

In the early 20th century, cognitive psychologist, Lev Semenovich Vygotsky articulates a constructivist outlook, connecting cognitive development with early childhood education. He discusses two types of cognitive developments; natural development and cultural development (Vygotsky, 1929). Natural developments occur through an individual's maturation resulting from simplistic every-day interactions, whereas cultural developments are associated with more competent and challenging interactions (such as linguistics) that occur through an individual's experience within a culture. Vygotsky (1929) expounds how cultural tools possess a key element in his cognitive development theory. He presumes cultural tools "connect children to their physical and cultural environment and help them achieve intellectual mastery over that environment" (Spodeka & Sarachob, 1999, p. 10). Therefore, different cultures acquire varying comprehension methods, which consequently alter the way individuals think (Miller, 1993). Given the intense power and influence of technology in today's modern culture of early generations, it is

understood that this cohort exclusively obtains unique learning requirements, divergent from other cultures and former generations.

Vygotsky (1962) introduces the zone of proximal development [ZPD] in his theoretical book, *Thought and Language*, an expansion on Jean Piaget's development theory of children being lone learners. Vygotsky's ZPD theory is an area of learning that exists when higher skillsets are offered to a child in which they acquire new intellectual competencies through a mentor's support (Vygotsky, 1978).

Although the concept of ZPD was introduced almost a century ago, this notion is in fact applicable in today's culture and can be paired with modern-day experiences. Challenging young children's mode of thinking in early developmental stages via technology gives them the opportunity to successfully expand their prevailing capabilities (such as language), ultimately enhancing their cognitive development.

3.2 Linking Pre-Literate Exposure to Literacy

Whilst communication and language are universally fundamental skills, they are especially crucial during the first five years of a child's life, as this is the time when brain developments are most rapid (Wilson & Conyers, 2013). The role of language influences cognitive studies, which Vygotsky believes is the most prominent aspect of cultural tools within the realm of child development (Spodeka & Sarachob, 1999). Forms of expression are less restrictive given the various methods by which digital language can be communicated. Recently, early interactions with swipe-technology have been observed to affect digital literacy (Plowman & McPake, 2013; Infante, 2014; Passey, 2014).

Given pre-linguistic children's inability to communicate verbally, young children seek alternative methods of communication beyond verbalization. Traditionally, children have expressed themselves through art, music and movement (Alschuler & Hattwick, 1947). Another common form of communication utilized by young children is the act of gestures. Gesture developments are said to be associated with the emergence of language in a given child's future (Crais, Watson, & Baranek, 2009). The development through communicative forms is of high significance given the value of obtaining strong language skills.

In more recent years, young children have additionally adapted to modern communication tools, such as swipe-technology. A recent study by Plowman and McPake (2013) confirmed that a Born Digital could acquire digital literacy while simultaneously being traditionally illiterate. Collin, age three, grasped the understanding of storing and retrieving digital photographs that can be shared via communication tools. Independently, he conversed with relatives digitally through the transferring of photographs, emoticons, and video interactivities. By observing Collin's online interactions, the observer of the study discovers that the young boy was competent in conversing through a digital language in which both him and his relatives share (Plowman & McPake, 2013). Collin's case study identifies that "With the right support, digital technology can open up avenues of communication over time and distance and provide new and intriguing possibilities for the development of young children's communicative skills" (Plowman & McPake, 2013, p. 29).

This case study shares many similarities to Vygotsky's theories discussed above even though his studies were hypothesized prior to the existence of modern

forms of technology. Vygotsky's research remains applicable in digitally rich environments. The role of an appropriate mentor is underlined in both the theory of ZPD and in the latter case study. Vygotsky's zone of proximal development theory requires appropriate mentor support in order to enhance a child's cognition, whilst Collin's case study also advocates support of a caregiver for swipe-technology to be an effective communication tool. Additionally, Vygotsky suggests that "The emphasis on tools within a culture depends on the needs and values of that particular culture" (Spodeka & Sarachob, 1999, p. 10). In Collin's scenario, swipe-technology acted as the cultural tool in which he effectively developed strong communicative proficiencies. Therefore, pre-literate children are no longer restricted to traditional forms of language expression; rather they can also utilize digital, cognitive-stimulating methods to express themselves.

Journalist, Andre Infante (2014) also links the revolutionary phenomenon of swipe-technology with the development of linguistics when he states "Touch-screens and multi-touch interfaces are now a permanent part of the fundamental language of human-computer interaction" (para. 2). As pre-verbal children constantly interact with touch-screen and multi-touch technologies, they are given the opportunity to explore and acquire digital languages prior to traditional languages such as, written and oral.

A child's powerful interaction with swipe-technology can be viewed positively in that early exposure offers enhanced cognitive development in young children and provides opportunities for stimulation acceleration (Passey, 2014). Introducing modern technology is encouraged at an extremely young age because it

can extend communicative tools to reach greater distances and allow pre-verbal individuals to explore various gateways of expression. However, this demonstrates that a vast amount of early swipe-technology exposure can lead to material interference with the acquisition of traditional linguistic skills. Language has constantly been recognized as a fundamental requirement (Department of Education and Science, 1999a; Wood, 1998) in educational curriculums. A change in language tendencies can in fact cause inharmonious conflict that occurs in traditional early childhood education curriculums.

3.3 Redesigning Pedagogy in Early Childhood Education

Prensky (2001a, b) opines on the drastic transformation in generational-based learning styles, as educators are often unsuccessful in satisfying student's needs. It is critical that current pedagogical practices in early childhood learning are re-examined, in an effort to better understand how to engage the new generation of digitized students. Failing to acknowledge this necessary transformation can cause educational institutions to become obsolete (Bennett, Maton, & Kervin, 2008).

Whilst the digital era continues to evolve, the ultimate goal of an educator has remained unchanged in that they aim to promote learning. Building a practical communication skillset is one area in which educators are encouraged to develop, especially in young children (Supon, 2009; Porter & Eilts, 2011). Older methods of acquiring communication competencies have been displaced in order to make room for modern tools, which serves to satisfy the same learning objectives.

Teaching cursive handwriting is an example of one method previously enforced by educators in the classroom to develop student's practical

communication skills. Learning cursive script provided multiple benefits in a young child's life, such as enhancing children's creative imagination and enabling fine-motor skills (Porter & Eilts, 2011). Unfortunately, the standard pedagogical practice also caused frustration in children since developing the skill to write cursive was extremely time-consuming and was weighed against other available options that may achieve the same result.

New digital tools, such as swipe-technology have enabled innovative gateways in developing strong communication competencies. E-books can be accessed through touch-screen tablets, such as an iPad or Android, and is proven to support language and literacy skills in young children (Porter & Eilts, 2011). Unlike traditional customary text (i.e. cursive), children can apply more senses when participating in e-book engagements by interpreting audio and visual through sounds and animations, which deepens an understanding of significant story events through interactive experiences (Porter & Eilts, 2011). Since e-books operate through swipe-technologies, this signifies that modern tools provide the opportunity to expand a child's comprehension and development. Thus, learning cursive writing can be viewed as a cursive competence, however, it is distinct from a linguistic competence in that it is not necessarily required to produce coherent communication.

Rather than imposing cursive, caregivers now have a wider set of choices, including e-books (emanating from swipe-technology platforms) in developing a young child's literacy and communication skills. Learning cursive can be aggravating for many children and the excessive time spent acquiring the script could have

instead been contributed in learning other skills, abilities or knowledge.

Furthermore, fine motor skills that are gained through writing cursive can also be obtained via touch-screen technology in that a child's finger acts as the stylus (Porter & Eilts, 2011). After weighing the positives and negatives of teaching cursive, the Board of Education made the decision to remove cursive handwriting from the curriculum and concluded that:

Teaching cursive is obsolete. If the goal of writing is communication, then the tool that is used to communicate should not be the focus. The act of communication is the focus. Whether you use print, cursive, or type is not paramount. As educators are mandated to teach more and more information, knowledge, and skills in a 21st century format, some older skills need to be laid to rest. Cursive is one of these skills. (Porter & Eilts, 2011, para. 8)

Swipe-technology will not only help acquire the same skills offered from learning cursive, yet these skills can now be introduced earlier in a child's life. According to older curriculums, educators taught children cursive in second or third grade (Supon, 2009), however, a Born Digital's innate proficiency in digital literacy will allow the skill of communication to be developed earlier than what is promoted in the education system's curriculum, relative to cursive handwriting. This can revolutionize a child's development since more competent skills can be obtained during the most crucial stages of a child's growth.

This section demonstrates that different learning styles are implemented by caregivers to achieve a given learning objective. The catalyst for the shift in learning styles is due to a newer practice being more effective whether it be a time saver or a

more stimulating and engaging learning experience. The advancement of technology and use of swipe-technology in early childhood education is a prime example of how modern learning styles are impacted in the classroom. The ministry of education has recognized that cursive writing should be phased out of the curriculum and substituted with other technologically modern tools to achieve the same purpose. This will also help narrow the gap within the digital divide.

Chapter 4: Conclusion

4.1 Findings

The original investigation was to discover if the digital language will soon surpass traditional language as the dominant form of communication, while considering how this shift will impact Born Digitals. As a result of the conducted research, including a prime focus on theories of early childhood development, early childhood education, and formal institutional systems, certain findings can be derived. By examining these findings, it allows a better understanding of the issues at hand and guidance in answering the research question.

Through the works of Vygotsky's cognitive development perspective, positive discoveries are found by utilizing cultural tools under his theory of the zone of proximal development. This idea can be directly applied to media-saturated environments where technology acts as the cultural tool, enabling pre-verbal cognitive stimulation in young children with the proper guidance.

Pre-literate children's exposure to swipe-technology has given Born Digitals the ability to express themselves in new and innovative ways beyond traditional forms. In fact, it is possible for this cohort to develop a digital form of communication prior to acquiring verbal language skills. In order for this transformation to be successful, children need to have the proper support from caregivers, which will help facilitate new communication skills. While it is true that the digital language has enabled new forms of communication, it is also being argued that early swipe-technology exposure inhibits children's ability to develop

other life essential skills, such as social, interpersonal and critical thinking skills, that flow directly from early verbal language.

The learning objectives of teaching specific skillsets have remained unchanged in the education system, however, the practice of how to best deliver these learning objectives is often debated. This practice has changed the way educators prepare students for a successful future. A prime example is demonstrated by digital methodologies of communicating usurping cursive handwriting. Swipe-technology is a key driver that has accelerated early childhood learning skills which have become incongruent with the educational learning process. This has caused the educational institutions to pause and evaluate how its pedagogical approaches can be adapted to engage children or otherwise face the risk of enhancing the digital divide and experience educational obsolescence.

Collectively, the findings support that digital language is surpassing traditional language as the Born Digital's primary form of communication. Since this trend is not showing any signs of slowing down, it is presumed that communicating digitally will also be the latest generation's most dominant form of expression, causing traditional language to become less significant.

4.2 Evaluations

A Born Digital's primary literacy is historically different than preceding generations, thus causing a shift in learning styles between the Born Digitals and Digital Immigrants. Therefore, pedagogical methods must change to accommodate the new generation's preferred learning style. Currently, the education system is organized in a rather hierarchical structure where the process for delivering the

learning experience comes from the top-down. Governments set the objectives, ministries determine the curriculum, and teachers meet the curriculum by advocating a particular learning style. The modes of a classroom must change given the new learning styles of young digitized students. Their growing knowledge in the digital realm undermines teachers' positions. In order to maximize student's engagement, the education system needs to permit a bottom-up approach where Born Digitals can promote advanced learning styles due to the rapid pace of technological advancements. Authority figures hold the power to create a better learning environment and experience for students, ultimately minimizing the pre-existing digital divide between the Digital Immigrant educators and the Born Digital students.

It is understood that the importance of proper mentorship and support is necessary in order to maximize the positive effects in a Born Digital's maturation process. This key finding gives clear direction on what must be investigated in expanding research on this topic. It could be valuable to further explore swipe-technology utilization in the home and school environment in accordance with the caregiver's role. Based on this, it can be identified if the role of the caregiver should change and if so, how it can be shaped in a way that promotes all the positive effects of swipe-technology, yet mitigates the risks previously identified in section 2.4 *Swipe-Technologies*.

Expanding the scope of research to include a wider range of demographics may also be beneficial to further this study. Core demographic qualities can include age, race, gender, marital status, and income level. Inquiring a larger sum of

demography can help create a less bias approach in the current discoveries. New findings may arise about swipe-technology based on different societal norms and responsibilities.

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