

CASE STUDY: CAN DIGITAL NATIVES ADAPT TO TECHNOLOGY'S CHANGES AND SPEED?

*Scott C. Spangler, D.Sc., Robert Morris University, sspangler_us@yahoo.com
Anthony Rodi, D.Sc., California University of Pennsylvania, rodi@calu.edu
Gary DeLorenzo, D.Sc., California University of Pennsylvania, delorenzo@calu.edu
Frederick G. Kohun, Ph.D., Robert Morris University, kohun@rmu.edu*

ABSTRACT

The research utilized mixed method research using a survey of 29 digital native Information Science and Information Technology students at California University of Pennsylvania in April of 2015. The research sought to clarify the gap in the current literature's findings that deems digital natives as sophisticated individuals with a large tacit and explicit knowledge body with software, computing and mobile technologies. Overall, the research seeks to understand through an emic perspective, how digital natives regard technology, what is their main usage of technology, and how sophisticated they are with mobile computing technologies.

Keywords: Digital Native, Technology, Information Technology, Information Science, Millennials

INTRODUCTION

Every generation seeks answers. Through history and time the answers have been generated similarly through research and sharing of tacit and explicit knowledge. The differences over the last 100-years in information literacy have been the speed and breathe of knowledge transfer. Recently, the digital native culture has been immortalized as the leaders and innovators in sharing knowledge and information to innovative technology transfer methodologies. We know the digital native as the "Millenials." They include our kids, our nieces and nephews or grandchildren. They are born into technology and display a comfort level with media, devices and technologies not experienced by earlier generations [7].

This research seeks to understand from an emic perspective what knowledge digital native culture has and does not have with its engagement with technology and innovations. The research will utilize a mixed method approach to answer questions about the digital native's technology sophistication and use of technology in higher education domains.

LITERATURE REVIEW

Spangler's research on digital native students in higher education observed the culture communicating through technology independently and indiscriminately. Spangler utilized an ethnographic observation technique and five independent focus groups during his yearlong study at a mid-Atlantic university. Some 400 students were observed in classrooms and in social domains such as the university's café and gymnasium [14].

In a recent study, Spangler (2015) observed students utilizing unsophiscated software programs like iMovie to create audio-video clips or shorts to send hidden language messages to peers through technology interfaces. The hidden languages, which were similar to students' generation in the 80's adopted from music compilations on tapes, secretly divulge messages to the knowing recipients. Interestingly, the ethnographer's work also uncovered digital natives utilizing technology cloud based photographic visuals to send further instant messages to peers about their personal lives, statuses, and emotions [14].

According to his research, Spangler, observed digital native youth photographing themselves through applications like Snapchat—in various emotional statuses and then posting the instant photographic previews of their sad or emotional well-being to a clouded group service—to seek instant responses from followers or friends. The instant returned messages acted like modern day serotonin inhibitors that changed the individual's mood. This communication form, or hidden language through technology, demonstrated a deeper cognitive recognition about

technology outside of a sophistication level. The multifaceted utilization of technology and innovations by the 2015 digital natives, or as Spangler coined them “Snapchatters” demonstrated a cultural trait of technology externalities [14].

His [14] research contrasted past scholar Bauerlein, [1, 2] and Rodi, Spangler, Delorenzo, & Kohun, [11], captured most recent works like Boyd [3]. Although Boyd also recognized cultural shifts in the literature, the two, for the most part, consider the culture having significantly different traits. Boyd’s ethnographic study was a broader scope research, which may be the significant difference from Spangler’s findings that were small in scope and generalized to only higher education students. One major contrast was how Boyd determined her informants’ utilized technology to disengage and create race lines. Whereby Spangler’s [14] research declared the youth in higher education matrices sought to eliminate race, gender, and nationality lines through technology.

The two recent studies by Spangler and Boyd [14, 3] found similar recognitions in digital natives having shortcomings with software knowledge and sophistications. Specifically both found the digital native culture lacking in software, hardware, and overall knowledge about sophisticated computer programs and programming. This comparatively contrasted past literature that trumpeted cultural successes in technology success [5, 6, 8, 10, 12, 13, 15, 16, 17]. The two lone dissenters in the literature, and the harshest critic of the culture, significant negative attributes of the culture through qualitative interviewers. The largest captured negativity was the culture’s inability to demonstrate knowledge or usage of basic productivity software and library science research tools. These findings and the furthering research thoughts and suggestions from Rodi, et. al [11] grounded this study’s questions on understanding technology knowledge, and it’s controlling aspects in the current digital native higher education culture.

METHODOLOGY

The IRB boards from two medium-sized universities in the mid-Atlantic region approved a quantitative and qualitative research structure based on digital native’s computer literacy, use, and knowledge in May of 2015. A Question-Pro survey was administered to four higher-education classrooms during April 2015 at a medium-sized, public university in the mid-Atlantic region. Twenty-six students finished the survey out of 40 that started the process. Volunteers that dropped out of the survey did not disclose a reason.

The average participant took 11 minutes to perform the 26-question survey. In addition to the questions, participants were permitted to add additional qualitative comments beyond the traditional Likert Scale modeling. Participants left qualitative comments on 20 of the questions.

FINDINGS

Seventy-six percent of digital natives participants contended that they are “more sophisticated” than past decades. Students stated their knowledge of utilizing technology, such as Smartphones or computers, has grown over the years because of access to the innovations. Less than three percent of the participants considered themselves having a low level of knowledge when dealing with computers. One participant stated most of the generation grew up in an area “familiar” with basic languages, “but I still need to use tech support for all Windows OS from 3.1 and Mac OS 8.6.”

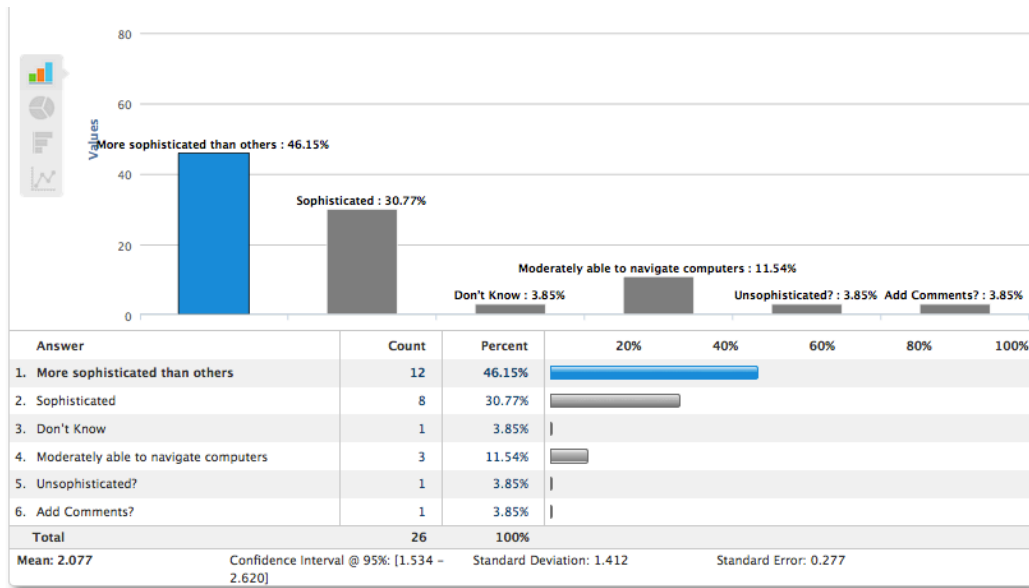


Figure 1. Digital Natives levels of Technology Sophistication

Interestingly when the participants were asked how they use the technology, 88% remarked mainly for research and to communicate with their peers. Slightly 60% of the participants stated they communicate all the time with their peers using technology and 29% said sometimes. And out of the conversations, the digital natives stated (60%) most all of the conversations stayed in the confines of their age groups. One participant remark, “I communicate via text, email, or Facebook. I rarely call people anymore.”

In addition, 75% of the participants remarked they directly communicate with their parents through technology such as a Smartphone in text or emails. Participants remarked, “My mother and I communicate primarily through text messages.” Others concurred stating they send their parents (fathers) text messages and emails. Conversely only one participant stated her “mother has just purchased a Smartphone, but has a Facebook account.”

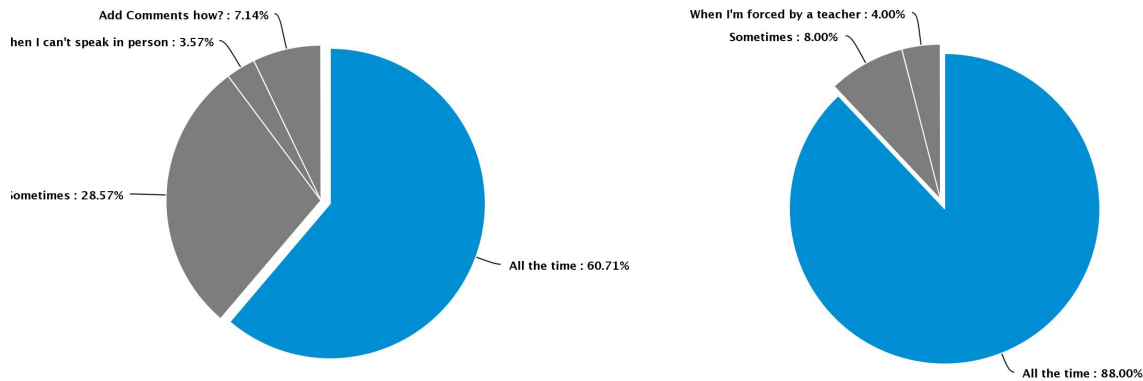


Figure 2. Technology Use to Communicate and Use for Knowledge Seeking

This reflection suggests that the majorities of today’s digital native students’ parents are technology friendly immigrants and approve of the texting and emailing communication formats. Texting was discovered to be the highest or most acceptable format of communication in the culture with almost a 30% higher rate than emails and traditional phone conversations. These parents in all rights could be considered Tapscott’s and Prensky’s original digital native dating back to the late 70’s in birth record, which would suggest their strong acceptance of innovations and technology with their children.

This finding might also suggest why the digital native students today are more receptive to communicate outside of their native cultures and with a global audience. Participants stated that race, gender, and nationality have no effect on their communications because in the digital formats there can be no color or race. The ability for a participant to be “anonymous” is readily easier today than in the past. This finding could be considered why respondents remarked a race and gender is diminishing in their cultural communications. Over 50% of the participants considered their culture’s technology use as a progressive format for breaking down the barriers in gender and race communication.

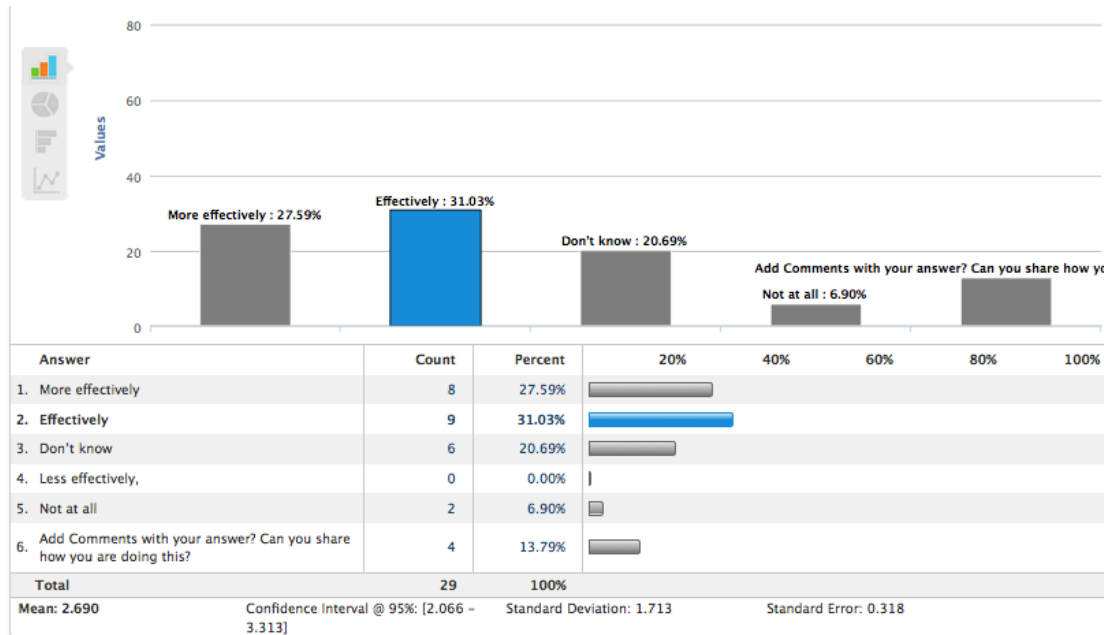


Figure 3. Digital Native’s Reflections on Communicating with Difference Races

Participants commented, “I feel that gender lines are being blurred as time goes on. Technology has enabled people to anonymously communicate, and in many cases not know the gender, ethnicity, or religion of the others.” Others remarked, “Anonymity removes gender bias in a way that face-to-face interactions cannot.” In an agreement one participant elaborated in the discussion describing face-to-face communications as filled with anxieties. Extending on the thought the participant stated technology is diminishing face-to-face anxiety issues in the culture. “Social anxiety may hinder face to face communications, while online; the feeling of 'safety' can help overcome that.” Interestingly one participant described texting as a safer form of communication and with a level of projection:

Communicating via text or chat may provide a certain amount of freedom for the shy that may not be able to express themselves the way they would like, when meeting face-to-face. It is not the same as the anonymity the Internet provides but a protective bubble. This experience is evidenced from in-class interactions and observations with students who are normally, quiet, timid or shy in class, showing little interpersonal communication with other students or with the instructor. In contrast, these same students become fluent communicators through emails or Discussion boards when interacting with technology. Technology has become a form of expression and interpersonal communication.

Interestingly, and congruent with the findings in Rodi, Spangler, Delorenzo & Kohun [11] the students remarked that they prefer digital formats of anything analog today. The student participants described their habits of reading “hard books” as something they rarely do, and prefer digital PDF’s or journals today. Forty-three percent of the participants candidly stated they prefer digital media’s like the PDF’s over hardback books unless it was for “relevant information” and or “long reading.” In a study conducted by Brumberger [4] it was discovered that Digital Natives/Millennials have a well-developed visual communication from constant exposure to visual information. This

“visual literacy” as explained by Brumberger, is a highly developed skill with the ability to quickly scan visually to search for important images, themes and key items, in place of reading volumes of text, [4].

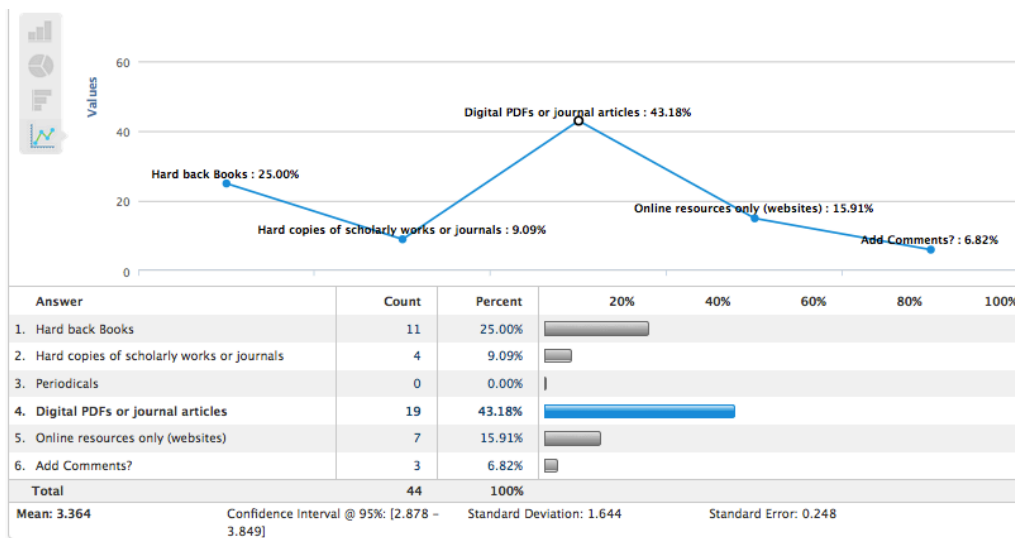


Figure 4. Digital Native’s Preference on Medias

These findings suggest a movement away from hardback books and media’s in the culture like Rodi, et. al [11] discovered. But recent research demonstrates a deeper meaning about why the digital natives are changing habits. Participants’ comments reflected the need for “easy” access, “convenience” and “search” specific information. Digital natives are always “plugged in.” Their constant connectivity with “Ubiquitous Information Systems” is an embedded necessity thus reducing the need for books and traditional forms of information and communication [9].

CONCLUSION AND FURTHERING RESEARCH

In the future, digital natives will no longer be an acceptable term. The generation and eras where technology such as computers and Smartphones were once thought of as unique inventions are lingering on universal commonality. In today’s society, Nanotechnology and Google Glass are innovations breaching a new frontier in technology. This new frontier will once again navigate researcher’s needs to uncover and study future generations as early adopters bridge the technology gaps.

This research uncovers new concepts about insider emic perspectives through its quantitative and qualitative research about the current culture’s regards to technology sophistication. It also provides additional insider coherence to past literature describing a cultural shift towards a disdain for analog literature, books, newspapers, and journals that libraries and universities will have to consider for their future educational investment needs. Most importantly, the literature addition here describes a need for further research to clarify and find meanings about how future generations ascribe meanings to technology and needs associated with technology.

REFERENCES

1. Bauerlein, M. (2009). *The Dumbest Generation: How the Digital Age Stupefies Young Americans and Jeopardizes Our Future (Or, Don’t Trust Anyone Under 30)*. New York, NY: Tarcher.
2. Bauerlein, M. (2011). *The digital divide*. New York, NY: Jeremy P. Tarcher.
3. Boyd, D. (2014). *It’s Complicated: The Social Lives of Networked Teens* (1 edition). New Haven: Yale University Press.
4. Brumberger, E. (2011). *Visual Literacy and the Digital Native: An Examination of the Millennial Learner*. *Journal of Visual Literacy*. Spring 2011. Vol. 30, Issue 1, p. 19-47.

5. Hart, M. L., Gray, D. M., Chinburg, S., Saffarian, M., & Hart, W. (2011). Technical knowledge among undergraduates: Perception versus reality. In Conference Participants (p. 125). Retrieved from <http://lupus.northern.edu/academics/Documents/ceib/2011proceedings.pdf#page=125>
6. Howe, N., & Strauss, W. (2007). The Next 20 Years: How Customer and Workforce Attitudes Will Evolve. *Harvard Business Review*, 85(7/8), 41–52.
7. Hull, R. (2011). The Digital Natives are the entertainment! In H. Gautschi, & M. Manafy (Eds.). *Dancing with Digital Natives : Staying in Step with the Generation That's Transforming the Way Business Is Done*. (pp. 191-210). Chicago: Information Today, Inc.
8. Jukes, I., McCain, T. D. E., Crockett, L., & 21st Century Fluency Project. (2010). Understanding the digital generation: teaching and learning in the new digital landscape. Kelowna, BC; [Thousand Oaks, Calif.]: 21st Century Fluency Project ; Co-published with Corwin, a SAGE Co.
9. Myers, M.D., Sundaram, D. (2012). Digital natives: Rise of the social Networking Generation. *University of Auckland Business Review*. Autumn2012, Vol. 15 Issue 1, 28-37.
10. Palfrey, J., & Gasser, U. (2010). *Born Digital: Understanding the First Generation of Digital Natives* (First Trade Paper Edition edition). Basic Books.
11. Rodi, A., Spangler, S., Delorenzo, G., & Kohun, F. (2014). *A Case Study: Are Digital Natives Dead? What Are The Key Factors And Perceptions Librarian's View Of The Digital Native Culture In Higher Education?* *Issues in Information Systems - A Journal of IACIS*, 15(2), 207–213.
12. Smith, E. E. (2012). The Digital Native Debate in Higher Education: A Comparative Analysis of Recent Literature. *Canadian Journal of Learning & Technology*, 38(3), 1–18.
13. Smith, J., Skrbis, Z., & Western, M. (2013). Beneath the “Digital Native” myth Understanding young Australians’ online time use. *Journal of Sociology*, 49(1), 97–118. <http://doi.org/10.1177/1440783311434856>
14. Spangler, S. (2015). *What Is The Cultural Experience Of The Digital Native Student Today (2015)?* (Doctoral dissertation). Pittsburgh, Pa, United States of America: Robert Morris University.
15. Tapscott, D. (2009). *Grown up digital: how the net generation is changing your world*. New York: McGraw-Hill.
16. Tapscott, D. (2010). Teachers Must let Students Collaborate. In I. Jukes, T. D. E. McCain, & L. Crockett (Eds.), *Understanding the Digital Generation: Teaching and learning in the new digital landscape* (pp. 105–112). Kelowna, BC; Canada: SAGE Publications, Inc.
17. Zukowski, A. A. (2010, March). Navigating the Digital Culture as a DRE: Inch-by-Inch. *Momentum*, 41(1), 50–52.