

Digital Natives, Digital Immigrants, Digital Learners: An International Empirical Integrative Review of the Literature

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The author, preparing for a new position as a doctoral research faculty at the American College of Education (ACE), conducted an extensive integrated literature review of “digital natives” and related terms. Focus of the review was directed specifically around digital learners defined as those born between 1980 and 1994. The results clearly revealed a variety of definitions for “digital natives” and “digital immigrants” with no specific clarification or research-based rationale. In addition, strong evidence points toward little connection between a student’s age and digital skills and increased learning. Much of the research suggests that students’ digital competence may be much lower than their “digital professors.”

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The term **Digital Native** seems to have first appeared in the literature in the late 1990s and is mostly accredited to Prensky (2001a, 2001b) and Tapscott (1998, 2009). Students (called digital natives) are those born roughly between 1980 and 1994, and represent the first generation to grow up with new technology and have been characterized by their familiarity with and confidence in, with respect to Information and Communication Technologies (ICT). They have spent most of their lives surrounded with digital communication technology (Gallardo-Echenique, Marques-Molas, Bullen, & Strijbos, 2015).

Modern day students in kindergarten through college have spent their lives surrounded by computers, video games, cell phones, and other digital products. Today's average college grads have spent 5,000 hours of their lives reading, but over 10,000 hours with cell phones, email, Internet, and instant messaging (Prensky, 2001).

If modern day students are called "digital natives," what does that make the rest of us? Prensky (2001a) defines those of us who were not born into the digital world but have, later in our lives, adapted to and began to use this new technology, **Digital Immigrants**. Prensky continues by stating:

The importance of the distinction is this: As Digital Immigrants learn – like all immigrants, some better than others – to adapt to their environment, they always retain, to some degree, their "accent," that is, their foot in the past. The "digital immigrant accent" can be seen in such things as turning to the Internet for information second rather than first, or in reading the manual for a program rather than assuming that the program itself will teach us to use it. Today's older folk were "socialized" differently from their kids, and are now in the process of learning a new language (2001a; p. 2).

New Terms

Much of the international research reviewed indicated that although considerable attention is given to "digital natives" and "digital immigrants," few studies have carefully investigated the characteristics of these two groups. Many of the studies that supported the concept of "digital natives" and/or "digital immigrants" were based solely on anecdotal data and opinions. Many studies revealed a dislike and distaste for the terms "digital native" and "digital immigrant", based on a lack of any empirical evidence or substantive characteristics. Many authors including Gallardo-Echenique, et al. (2015); Bennett, Maton, & Kervin, (2008) found a more unifying concept and description to be "**Digital Learner.**"

A major study from the University of Barcelona (Gros, Garcia, & Escofet, 2012) posits that the "digital native" label does not really exist, due to the term's absence of evidence of a better use of technology to support learning. The debate has to go beyond the characteristics of the new generation and focus on the implications of being a learner in a digitalized world (p.1, Abstract). The paper further is based on the premise that the use of technology to support learning is not related to whether a student belongs to the Net generation, but that technology use is mainly influenced by the teaching model. It depends rather, on the pedagogical and teaching models of the institution (p. 2, Introduction).

The Gros, et al. (2012) study highlighted differences between students at a face-to-face university compared to an online university. Their results have several implications including:

- Teachers in face-to-face universities have to focus first on online materials, but more importantly need to also focus on how the use of ICT can support learning,

- Online learning is not only part of the experience of students at a distance, but is an important aspect of campus-based experiences, and
- The results of the study led the researchers to suggest the need to consider that technology-rich learning environments foster students' digital competencies (and not the other way around (p.11).

Gallardo-Echenique et al. (2015) reported that:

Despite the widespread acceptance of the concept of the “Digital Native,” the key claims of this discourse are not based on empirical research. In fact, in the paper “Digital natives, digital immigrants” in which Prensky (2001a, 2001b) proposes these terms, he did not cite any systematic and methodologically sound empirical research to support his ideas. Instead, the key claims are based on popular and quasi-academic literature and tend to be informed by anecdotal information and proprietary research funded by and conducted by private business (p. 6).

In the Gallard-Echenique, et al. Conclusions and Recommendations, they state two findings significant to the term “digital natives.” *One*, there is no commonly-accepted definition of digital natives as it varies among individuals, society, regions and nations, and also over time. *Two*, there are a number of variables other than age which may help in understanding the nature of students' use of digital technologies.

According to Rapetti (2012, p. 39), the expression “Digital Learners” is meant to refer generically (and synthetically) to all of those labels (Digital Natives, Generation Y, Net Generation, etc.), and even those supposedly classified as Digital Immigrants (this author included). Rapetti prefers and coined the term, “**Learners of Digital Era**” (LoDE) and suggests the LoDE perspective consists of the following four facets (Rapetti & Cantoni, 2010b, p. 5):

- The focus is on persons, so the first word refers to them (i.e., Learners);
- The perspective is anthropological-pedagogical, so the chosen word is “learning”;
- Not only young people learn through ICTs in the Knowledge Society; and
- The lesson learned from the “Digital Natives” label: the pervasion of digital technologies in everyday life has a great impact on learning experiences, but we should refuse to apply the “digital” adjective to people and imply generational divides.

Similarly, Gallardo-Echenique et al. (2015), who do not think there is much difference between Rapetti's **LoDE** and their **Digital Learner** designation, present their Digital Learner proposal as follows:

- Focuses on “learners” rather than persons, who should realize the possibilities and potentials of digital technologies in their environment and recognize the value of technology and the opportunity it presents the learner in his/her daily life,
- Argues that learners are not merely users or consumers of technology,
- Highlights the complexities of learner's technology experiences,
- Rejects the generational boundary and any chronological generations that exclude other types of actors who share similar practices (except all learners),
- Does not assume any pre-defined learner characteristics, and

- Adopts a socio-cultural, anthropological, communicational and pedagogical approach from the learners' perspective.

Method

The purpose of this *integrative literature review* was to research the strengths and/or weaknesses of the existing scientific evidence, identify existing gaps in the current research, and identify the need for future research of this phenomenon of digital learning classifications. Another purpose was to scientifically describe potential implications for online leadership preparation programs preparing our nation's future school leaders. A further purpose was to present a unifying concept to higher education faculty and students enrolled in educational leadership programs identified as "digital learners."

Empirical studies reviewed were from several countries and universities: United Kingdom, United States, Switzerland, Iran, Spain, Canada, and Belgium.

To accomplish this stated purpose, the author utilized an *integrative literature review* that "reviews, critiques, and synthesizes representative literature of a topic in an integrated way such as new frameworks and perspectives on the topic are generated" (Russell, 2005; Torracco, 2005).

Findings

1. Evidence Exists to Suggest Generation is Not the Issue.

Generation or age groupings are frequently used to explain and rationalize the use of communication technologies in higher education. Several studies and a comprehensive review of the literature, and one in particular provides evidence that this is not the case. Bullen, Morgan, and Qayyum (2011) conducted an empirical study at one postsecondary institution in Canada finding no generational differences in how learners say they used a limited set of information and community technologies (ICTs) in higher education. In addition, their study suggests there are no meaningful differences between net generation and non-net generation students (at this institution) in terms of their use of technology. In addition, the results indicated the students' use of technology was driven by (a) Familiarity, e.g., well-known to students (b) Cost, e.g., mobile phone plans, and (c) Immediacy, e.g., instant messaging.

Other researchers found similar findings – there is no empirical-sound basis for most of the claims about the net generation's digital learning related to generation (Bennett, Maton, & Kervin, 2008; Guo, Dobson, & Petrina, 2008; Jones & Cross, 2009; Kennedy, Dalgarnot, Gray, Judd, Waycott, Bennett, Maton, Krause, Bishop, Chang, & Churchward 2007, 2009; Kvavik, 2005; Margaryan & Litteljohn, 2008; Pedro, 2009; Selwyn, 2009). Several studies reported that the students' use of technology is related to other factors that were reported by Bullen, et al., (2011), such as accessibility, cost, and immediacy.

2. Generation Is Not the Issue, Context Is

Bullen, et al., (2011) contend that rather than a focus on generation, context is more important and significant. They explained that this position "is not an argument for maintaining the status quo at post-secondary institutions" (p. 17). Instead, the meaning is that we ought to resist the temptation to base our decisions on generational stereotypes but to investigate deeper factors of how students are using technology and what role it plays in

learning and teaching in higher education (Kennedy, Judd, Dalgarnot, & Waycott, 2010). Bullen, et al., (2011) further defined context as providing faculty with information communication technologies that are specific to content and context. Some examples include technology tools that are collaborative (such as discussion forums, e-portfolios, and communities of practice) to develop communication, meta-cognition, and interpersonal skills (p. 18). Author note – this is the structure and intent found in the American College of Education (ACE) masters and doctoral programs/curriculum and use of their Learning Management System (LMS), Canvas Network.

Bullen, et al., (2011) concluded their research studies by stating that they did not find any evidence to support claims that digital literacy, connectedness, a need for immediacy, or a preference for experiential learning were characteristics of a particular generation of learners (p. 18). Further, their findings are consistent with the conclusions of other researchers (Bennett et al., 2008; Guo et al., 2008; Jones & Cross, 2009; Kennedy et al., 2007, 2009; Kvavik, 2005; Margaryan & Littlejohn, 2008; Pedro, 2009; Selwyn, 2009).

Most important is the position that due to the diversity of programs at post-secondary institutions, decisions regarding the selection and use of information and communication technologies may not be appropriate for all programs – thus, decisions regarding the implementation and specific use of ICT should be made at the program level, with caution of making institutional-wide implementations. The position also relates to the notion that often teaching and learning needs may vary widely across institutions, so making ITC decisions may make better sense to be made at the individual department levels (Bullam et al., 2011).

3. Most Studies Researched, Point toward a More Unifying Concept of the 21st Century Student

Since the research reveals much disagreement and dissatisfaction with the terms *digital native* and *digital immigrant*, there is general agreement for a new “unifying term” that is more based on the international empirical studies that focus on the learner. It appears that many of our international researchers posit we need a unifying term that focuses on the learner without bias toward age or generation.

Several of the researchers presented in this paper, reject terms that are based on age or generation (e.g., digital native, digital immigrant). Rapetti and Cantoni (reported above) suggest a term, **Learners of Digital Era** (LoDE) and Gallardo-Echenique, et al. prefer **Digital Learners**, a term they believe to be a unifying term that offers a more global vision of the 21st century student.

Observing the dates of the existing and in progress research studies on digital learning (beginning around 2001) one can posit that the research around learners in the digital era is just beginning, and growing at a rather robust speed. One theme stands out throughout the literature reviewed – there appears to be general agreement that we need to move beyond the superficial dichotomy of *natives* and *immigrants* and focus on the implications of being a learner in a digital era, and “try to develop a comprehensive understanding of the issues that take into account the diversity of cultural and institutional contexts” (Bullen & Morgan, 2011, p. 63 and Gallardo-Echenique, et al., 2015).

4. Students’ Digital Competence May Be Much Lower than Their “Digital Teachers”

Throughout this *integrative review of the literature*, a common theme emerged that “may suggest” that we are incorrectly defining a student’s *frequent use* of technology as his

/her competency in using technology for increased learning. The research rather reports that students of the “digital native” designation use computers, mobile phones, and the Internet for rapid communication and convenient access to services and information (Gros, et al., 2012, p. 10).

This position is also taken by Kennedy et al. (2008), who first points to the problem and confusion with Prensky’s “digital natives” label.

Prensky (2001a) not only pointed to the supposed natural technological affinity and literacy of the Digital Natives; he also expresses concern at an apparent lack of technological literacy among educators. He labeled lecturers in higher education as ‘Digital Immigrants’; foreigners in the digital lands of the Net Generation; and regarded the disparity between the Natives and Immigrants as the “biggest single problem facing education today” (p. 2). The preferences and skills that characterize the Digital Natives were said to be incompatible with the current teaching practices of the Immigrants. Prensky and other commentators (Frاند, 2000, Oblinger, 2003) suggest that because of this disparity, educators need to adjust their pedagogical models to suit the new kind of learner they are encountering in this new generation of students. Not surprisingly, this argument has gained widespread attention in higher education circles (e.g., Doherty, 2005; Rodley, 2005).

Kennedy, et al., (2009) conducted a major study of incoming students at the Griffith University of Melbourne, and found that while some came in with technology and tools of the ‘Net Generation,’ it was not the universal student experience. They further found that moving beyond entrenched technology and tools (email, phone computer), the pattern of access to a range of other technologies showed considerable variation (p. 117). To consider widespread revision of curricula to accommodate the so-called Digital Natives is not warranted, “since they so obviously speak a variety of tongues.” (p. 117).

Clearly, the Kennedy, et al. (2009) study provided evidence that core technology based skills do not necessarily indicate possessing more sophisticated skills across a wide range of applications or general information literacy. And further, being a member of the ‘Net Generation’ does not translate to knowing how to use the more advanced technology-based tools used to increase student interaction and knowledge at the university levels.

Implications for Teaching and Learning Practices in Educational Leadership Programs

This *Integrative Review of the Literature* reveals that several researchers, through their empirical studies, looked directly at the variety of terms, but specifically (a) “digital natives,” (b) “digital immigrants,” and (c) “digital learners,” and several other related terms. There seems to be a wide agreement that the terms “digital natives” and “digital immigrants” are especially problematic for two reasons: (a) there is little (if any) empirical evidence included to support the claims made about digital natives and digital immigrants in higher education, and (b) there is no research-based evidence that we should be focused on *age* as a determined factor in identifying competent and experienced students in Information and Communication Technologies (ICT).

Educational leadership faculty members have been dealing (rather successfully) with online instruction and programs for several years. However, we all agree that many changes have occurred in the recent few years, especially moving beyond just productivity to really addressing what technology offers for more authentic and deeper learning. The following implications based on this *Integrative Review of the Literature Review* may identify and assist

higher education faculty as they design their programs with respect to Information and Communication Technologies (ICT).

Implication 1

It is necessary and recommended that we look at other individual variables besides age which can help us to better understand how best to offer our digital learners an academic environment that maximizes student learning.

Implication 2

There now is a significant amount of theoretical literature focused on the digital learner, but this effort is just beginning and fortunately seems to be “still growing.” As educational leaders, we need to stay abreast of current research as we move forward with innovative and learner-focused programs.

Implication 3

We must be open to possible adjustments and alterations in our digital programs. We are aware of the speed at which student characteristics may and can change, as this literature review has revealed. Therefore, as educational leaders, we must be conscious of and open to the diverse and varied characteristics of our students. As Kennedy et al. (2008) noted, “Evidence of who our students are must remain an important factor in informing how we use the array of technological tools at our disposal to design rich and engaging learning experiences for all students” (p. 120).

Implication 4

As many researchers in this literature review have covered, it is important for program designers to stay focused on collaborative technology tools (such as discussion forums, e-portfolios, and communities of practice) to develop communication, meta-cognition, and interpersonal skills. In creating the virtual learning environment, program designers and instructors must be cautious of arguments for changes in virtual pedagogy based on unsubstantiated variables such as age (e.g., digital natives) Educational leaders must exercise additional caution with surfacing positions that assume the digital learner brings advanced technological skills because of prior use of a variety of leisure and communication skills. Barnes, Marateo, & Ferris (2017) rightfully point to the work of educator Seymour Papert (1993) who argued “computers and technology can be powerful teaching tools, but their potential is not fully exploited by educators who use them as isolated tools, disconnected from the processes of student life and learning” (para. 8).

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