

Digital Literacy Inequities, Higher Education, and the New Digital Divide

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Abstract

At the onset of the Information Age, there was a period of exponential, technological growth. Popular games and social networking became norms in daily society. This constant access to stimulation had students of all ages tuning out in classes that were taught through traditional methods. The incorporation of technology into daily learning became a necessity to keep students at all levels of learning engaged. During this time, it was hypothesized that digital literacy skills would be acquired naturally through emersion just as oral and written literacy develop, thus the assumption was that children born into and raised during the information age would be proficient in the new literacies. Recent research reveals that this was not the case. While digital lifestyle skills did develop out of interest of the user, digital workplace skills have not followed suit. A digital divide first emerged between the two, creating a barrier in education due to the inability of many students, faculty, and staff to efficiently find, evaluate, create, and communicate information for learning and in their professions. Two decades later a second divide is emerging, a new digital divide, between those with access to information and communication technology (ICT) and those who have been historically marginalized with inequitable access. This paper will explore digital literacy in the disaggregate and how this phenomenon affects higher education and society as a whole. Implications and recommendations for higher education setting will be discussed.

1. Introduction

In today's globalized society, there is no escape from the digital landscape. ICT has a presence in most aspects of daily life. Everything from leisure and relaxation activities such as reading or yoga, to applying for a new job, adopting a pet, and even ordering food at some restaurants have become digitized through an app or a website. While these digital means are meant to streamline many services and open the door to more opportunities, what happens to those who do not have the means, access, or education to utilize these digital tools? For some, this door, intended to offer new opportunity closes, and instead becomes a barrier, creating digital inequities.

2. Digital Natives v. Digital Immigrants

The late 1990s and early 2000s was a period of exponential technological growth in society. Compet-

ition for the focused attention of students pitted educators against the latest technology advances of the era: iPods, iPads, video gaming systems, and remarkable special effects in film [1], [2], [3], [4]. Popular media gadgets and social-networking tools became fixtures of youth culture [1], [5], [6]. Constant access and stimulation to media has resulted in students tuning out in classes where content is taught through traditional methods [2],[7]. During this time, multiple researchers noted that the internet is the central engine behind these new literacies and cited the need to incorporate technology into education in order to marry in-school literacies and out-of-school literacies to engage students in learning in a modality relevant to them [1], [3], [5], [8], [9], [10].

While it was once assumed that digital natives acquired a natural proficiency for technology, this generalization does not apply to the entire group, and we are now seeing both digital natives and digital immigrants enroll in higher education with digital literacy deficits. Some researchers assert the latter increases the gap between those who are technologically savvy and those who are not, known at the onset of the information age boom as the *digital divide* [1]. The reality is that both digital natives and digital immigrants struggle with *how* to use technology in purposeful way and the digital divide today is influenced not by the era in which people gained access to technology but by specific demographic characteristics leading to digital access inequities.

3. The New Digital Divide

The new digital divide is a phenomenon whereby individuals who have been historically marginalized and vulnerable can have limited to no access to ICT, limited digital literacy skills, and limited to no opportunity to purposefully increase their digital literacy skills. The intersection of these three components leads to digital literacy inequity. These characteristics are predominately associated with individuals who identify as the global majority, those living under the U.S. poverty threshold, or living in rural areas. These same characteristics may also intersect with those belonging to documented and undocumented immigrant populations, older persons, and persons with disabilities. In higher education all or some of the characteristics may be present along with individuals who are veterans, post-traditional learners (adult learners), first generation college, and traditional learners with gaps in their education.

4. Digital Literacy and Inequities in Higher Education

There is a growing population of adult learners in higher education who are expected to persist to graduation despite deficits in public policy and supports for both digital natives and digital immigrants. There are gaps in current research as to the digital literacy skills of students in higher education. Data collected by Program for International Assessment of Adult Competencies (PIACC) showed that 16 percent of adults were considered digitally illiterate [11]. Higher education practitioners discuss the challenges with digital literacy, digital equity, and the new digital divide within their institutions in conferences and other academic forums with little to no resolve to address the growing digital inequity and divide within their institutions. Current research is needed to determine the true digital literacy rates for adult learners to determine strategies to close the digital literacy gaps, specifically related to the new digital divide.

Adult learners arrive at higher education institutions with significant gaps in their education, needing significant remedial support in first-year college courses and expected to be able to navigate the complexities of online learning. A recent study conducted by *The Chronicle in Higher Education* [12] found that digital natives felt ill-prepared to access their university curriculum due to deficiencies in their digital literacy and that nearly half of faculty and staff overestimate student's digital literacy skills. The number of undergraduates enrolled in at least one online course rose from 36% in 2019 to 61% in 2021 [13]. While the 2021 percentage is down from the reported 75% of students taking courses online due to the global pandemic in 2020, this still reflects a 25% increase in online course takers since most campuses resumed in-person instruction. The disconnect between a student's ability to successfully access course curriculum, learning management systems, and technology support tools and the staff and faculties' overestimation of students' digital literacy skills adds to potential inequities.

5. ICT and Student Accessibility

Just as ICT has become engrained in business, transit, and governance, so, too, has it become a critical component of education and the utilization of these emerging literacies by both students and faculty can facilitate learning [14]. When faculty and students have a skills deficit in these areas, it inhibits the transformation of learning from active to static, therefore inhibiting the learning process. Being able to use a cell phone or a computer does not equate to being able to purposefully use technology in a higher education setting. Students, particularly since the

pandemic, need more support services to fully access the curriculum and persist to graduation. While many institutions provide ample support services, students are failing to self-advocate and use the services that would help increase their digital literacy. Support services are often limited to a specific function in a higher education organization (e.g. Student Services). Additionally, faculty and support staff often also struggle with digital literacy skills. This leaves a gap between what students need to increase their digital literacy skills and the need for higher education institutions to take a holistic look to increase digital literacy skills among the student, staff, and faculty populations.

6. Addressing Digital Inequities

Increasing digital literacy skills in higher education institutions should involve evaluating equity issues related to digital literacy and technology access. In the United States, 32% are unable to afford internet access in their homes and they are considered *subscription vulnerable* with the global majority being the most vulnerable [14], [16]. U.S. consumers pay some of the highest costs for broadband in the world with nearly half of families unable to afford access [17]. As a remedy to this dilemma, the U.S. government enacted the Digital Equity Act (2021). This law provided \$2.75B in funding to expand broadband access to vulnerable populations. What remains to be seen is how the funding has been spent. There is no public tracking of how the funding is being used at the state or federal level. Post-traditional learners (adult learners) in higher education continue to report challenges in accessing technology, internet connectivity issues, and having to share devices with children or other family members causing a disruption in their ability to learn [16].

The Digital Equity Act (2021), in theory, would assist with narrowing the new digital divide and increasing equitable access to broadband. However, moving into the third year of the new law and abundant funding, there is little evidence to show that post-traditional learners in higher education are benefitting from the government's plan to reach traditionally marginalized and vulnerable populations. Other notable factors listed in research conducted by Reddick et al. [18] on the affordability of broadband, especially in rural areas, include lack of competition, profit based discrimination, technology deployment cost, and socioeconomic factors. Knowing these contributing factors are barriers to digital inclusion, it remains to be seen what progress governments can make toward closing the gap by increasing access.

7. Strategies to Address Digital Literacy Inequities in Higher Education

Digital lifestyle skills are not equal to strong digital literacy skills that enable users to find, evaluate, organize, create, and communicate information in a meaningful way. U.S. higher education faculty report that first-year undergraduate students struggle with using technology to be successful in their courses, but it is likely that as many second-year and beyond college students also have deficits in their digital literacy with historically marginalized and vulnerable populations affected the most. Students are demonstrating more apathy towards seeking help to increase their digital literacy skills and the current practice of referring students to support services is no longer enough.

Students need a systematic and deliberate development of their digital literacy skills with faculty and staff taking a proactive role in providing tools and strategies. Strategies for a proactive approach to increasing student digital literacy skills and decreasing the digital literacy inequities include faculty and staff training, on-demand and in-person tutoring, one-to-one faculty-student support, structured faculty advising, library instructional support, and continuous access to help desk support for institutional learning management systems. All these strategies must be shaped around supporting and increasing student digital literacy skills. Additionally, first-term undergraduates would benefit from a digital literacy evaluation upon entry to an institution with a planned pathway to support students throughout their time in their college program or until students are able to show proficiency in their digital literacy skills. This will require structured and planned reevaluation of students who were identified as being at-risk of digital literacy deficits with particular focus on traditionally marginalized and vulnerable students.

8. Conclusion

Many papers and research studies reference the large number of the world's population that have access to the internet, but few focus on the population that does not have this access, and for those who do have access, few focus on the fact that equal access does not equate to adequate digital literacy skills or equitable access to ICTs. Having a tool with little understanding or misunderstanding of its use does not yield the same result as possessing a tool along with the knowledge of how to effectively utilize that tool.

In higher education, student digital literacy skills are often insufficient to meet the minimum skills necessary for post-graduation unemployment with historically marginalized students at an even greater risk of low digital literacy skills. With the slow execution of the Digital Equity Act (2021) objectives,

the most vulnerable in U.S. communities continue to live with limited access to ICTs and barriers to increasing their digital literacy skills. Strategies and interventions should target closing the gap caused by this new digital divide and preparing students for post-graduation employment.

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