Annotated bibliography on the Impact of Digital Technology on Student Learning.

Roods Pierre

Annotated Bibliography on the Impact of Digital Technology on Student Learning

Modern-day technology has impacted almost every aspect of life, and education is no exception. The increased presence of digital technology in the educational setting is becoming much more widespread and even more so in the wake of the COVID-19 pandemic. As a result, there are many debates concerning whether digital technology should play a greater role in student learning. To help inform this debate, this research will be focused on the specific question of what impacts does digital technology have on student learning. This research was guided by the following questions:

1. What is digital technology?
2. Who has access to digital technology? Who does not?
3. How is technology used in the educational setting?
4. What education can be considered digital literacy?
5. How does digital technology impact the way students learn?
6. Do digital natives have advanced technological skills?
7. Does the education system meet the needs of digitally literate students?
8. Should teachers change the classroom to meet the needs of a technology-focused generation? How?

Bennett, S., Maton, K., & Kervin, L. (2008). The 'digital natives' debate: A critical review of the evidence. *British Journal of Educational Technology, 39(5), 775-786.* https://doi.org/10.1111/j.1467-8535.2007.00793.x

This article echoes the concerns of Bennet et al. (2008) on the pressing calls made by digital natives' proponent for drastic changes to the education system to accommodate the supposed need of the digital natives. Bennet et al. (2008) argue that these claims may not be founded on theory and evidence-based research. For Bennet et al. (2008), much of the digital natives debate resembles an academic form of moral panic. In establishing its authority, the article published in the British Journal of Educational Technology refers to research studies and statistics that focus on students' technology use. The article challenges digital natives literature in that it provides research data indicating that there is scant evidence to support the notion of a homogenous generation with technical expertise. The authors argue that digital native arguments are largely anecdotal and appeal to our common-sense perceptions of a changing world.

From their research, the authors found that students tend to adjust their approach to learning based on their perception of what a task requires and their previous experience with a particular approach. Furthermore, the article revealed that students' everyday practices may not be directly applicable to academic tasks. This implies that the digital natives may have lower-level skills than expected. As claims for educational change are founded on the basis, the authors warn that it is problematic to attribute a particular learning style or even general preferences to an entire generation. This article contributes to this research as it addresses some of the key questions in this debate while focusing on the skills of the digital natives and what it means for education. It implores us to review the skills ascribed to the digital natives. The article analyses the claims fueling digital native arguments and their implications for educational change.

Jones, C., & Healing, G. (2010). Net generation students: agency and choice and the new technologies. *Journal of Computer Assisted Learning, 26, 344-356*. https://doi.org/10.1111/j.1365-2729.2010.00370.x

In the quest to provide an explanation for the patterns observed in young people's use of technology, Jones' and Healing's 2010 article suggests that the picture is more complex than the simplistic equation of exposure to new technologies and a generational change of attitudes and capacities as proclaimed by digital natives proponents. Published in the Journal of Computer Assisted Learning, the article engages with experts in the fields of education and learning. The article utilizes previous research data that was mainly collected by means of interviews. The research examined the choices students make about the technologies they engage with and the perceived constraints that they face. The article incorporates student voice and staff perspectives to conclude that agency actively shapes student engagement with technology.

The points raised in this article overlap with that of Bennet et al.'s (2008) article, "The 'digital natives' debate: A critical review of the evidence". The article indicated that young people are not clamoring for greater use of emerging technology, and that technology plays a diverse role in the lives of young people and consequently their skills are not uniform. It can be deduced from the article that students' choices are not a direct response to technologies that are universally available rather they are responses to local infrastructures and requirements. This article is useful as it investigates students use of technology in the university context to put forward the view that students are appropriators technology and not the reverse. In doing so, it highlights the relevance of the education system in fostering information literacies that will support learning.

Margaryan, A., Littlejohn, A., & Vojt, G. (2011). Are digital natives a myth or reality? University students' use of digital technologies. *Computers & Education, 56, 429-440*. https://doi.org/10.1016/j.compedu.2010.09.004

Margaryan et al.'s 2011 article explores the extent and nature of students' use of digital technologies and their perceptions of the educational value of these technologies. This article was published in the Computers and Education journal. In this article, the authors rely on a wide array of data from conducted studies to support their claims. While this research was conducted in 2007 on small sample, the findings are largely consistent with other similar recent studies. This suggests that it is unlikely that the patterns of technology use have changed dramatically. The data does not indicate that young students exhibit radically different learning styles but rather a deficit of learning literacies and a dependency on guidance from lecturers amongst students.

The ideas from this article tie in with that of both Bennett et al. 's 2008 article and Jones' and Healing's 2010 article as in similar fashion, the authors noted that students have a limited understanding of what tools they could adopt and how to support their learning. Their attitudes to learning appear to be shaped by teaching approaches and university requirements. Margaryan et al. insist that conventional forms of teaching appear to encourage students to passively consume information. Consequently, they assert that while calls for radical transformations in education may be legitimate, it would be misleading to ground the arguments for such change in students' shifting patterns of learning and technology use. This article is useful as it provides some insight on students' use of technologies for learning and their perceptions of educational value of technology tools and their motivations behind using particular types of technologies.

Bennett, S. and Maton, K. (2010), Beyond the “Digital Natives” Debate: Towards a More Nuanced Understanding of Students’ Technology Experiences. *Journal of Computer Assisted Learning*, 26(5), 321–331. https://doi.org/10.1111/j.1365-2729.2010.00360.x

This article by Bennett and Maton (2010) was published in the Journal of Computer Assisted Learning. The article analyzes what current research suggests about young people's use of technology to develop a more sophisticated understanding of students' experiences of technology. In doing this, the authors pivot their attention to the claims made about young people and their technology experiences rather than the issue of generational differences, as they believe that it is these claims that are driving the debate about educational change. Through the examination of the research, the authors suggested that there is significant variation in young people’s technology use. This dismisses the notion of a homogenous generation, as the research indicates that there is a diversity of interests, motivations, and needs within the generation.

Additionally, the authors analyzed the choices young people make about technology, to suggest that technology is used for, highly contextualized purposes and chosen for its value, its suitability for the purpose, and the nature of the interactions offered. Bennet and Maton’s (2010) arguments align with that of Jones' and Healing’s 2010 article and many other articles participating in the debate. The authors assert that the lack of evidence for the existence of an entire generation of digital natives undermines arguments made for radical change to education because of a proclaimed disjuncture between the needs of young people and their educational institutions. This article is significant as it aims to contribute towards a more sophisticated, rational debate that can enable us to provide the education that young people deserve. The authors help to paint a picture of young people’s interactions with technology and what it means for education.

Littlejohn, A., Margaryan, A., & Vojt, G. (2010). Exploring Students' Use of ICT and Expectations of Learning Methods. *Electronic Journal of E-Learning, 8(1), 13–20.*

Littlejohn et al. 's 2010 article involves an explorative study in which the changing patterns in students' use of electronic tools is observed over four years, to map changes in social communication with expectations in formal learning. The article was published in the Electronic Journal of E-Learning in 2010. One of the limiting factors of this study was that the data was collected during the period 2001-2004, prior to the emergence of contemporary social technologies. Nevertheless, the authors contend that students' expectations of learning are strongly influenced by their prior experiences.

In their study, they noted that despite a dramatic increase in students' use of ubiquitous technologies over the four years, their expectations of how they might learn at university remained relatively static. Based on their study and other available research such as the LEX study (2007), the authors suggest that students may not fully understand how ICT and formal learning can work together outside an educational context. They concluded that expectations of learning at university appear to be influenced more by prior experience of learning in formal situations than by the use of technology outside educational settings. In similarity to Margaryan et al's 2011 article, the authors make it clear that students have a limited understanding of what tools they could adopt and how to support their learning. This article is useful as it utilizes data from the student perspective to analyze the impact of technology on learning. The article also provides general insight on the correlation between students' ICT skills and their expectations of how they will learn. In addition, the study identifies trends and development with usage which can still be applicable today.

Carstens, K. J., Mallon, J. M., Bataineh, M., & Al-Bataineh, A. (2021). Effects of Technology on Student Learning. *Turkish Online Journal of Educational Technology - TOJET, 20(1), 105–113.*

In their 2021 article, Carstens et al. conducted a study to analyze the effects of digital technology on student learning. The article which is published in the Turkish Online Journal of Educational Technology - TOJET reports that technology has a more positive than negative impact on student learning and that the incorporation of technology helps motivate students to learn. The research indicated that students are more engaged and comfortable with technology. This is a contradiction to the claims put forward by digital natives proponents that students are disengaged. Similar to Jones and Healing's 2010 article, Carstens et al.(2021) acknowledge the fact that the digital natives have been raised in a technology-filled environment. Despite having been raised in a technology-infused environment, their study shows that more training for teachers and students is necessary to better implement technology in the classroom. This supports the view put forward by Margaryan et al. in their 2011 article stating that students have a limited understanding of how technology can support their learning. This article is beneficial to this research as it provides a more contemporary perception on the topic. The study steps directly into the classroom to examine how technology is being used by students and educators in order to determine its impacts. Furthermore, the article explores both the negative and positive aspects of technology in the classroom to contribute to existing knowledge on technology incorporation in classroom settings.