PRACTICE NOTE

Digital citizenship education in the New Zealand curriculum: Opportunities for postdigital practice

Jack Webster

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Abstract

Using existing research on digital citizenship education (DCE), postdigital theory, and *The New Zealand Curriculum* (*NZC*), this article indicates how schools and teachers can make links between curriculum and a postdigital interpretation of DCE. Although the view of DCE as being cross-curricular presents opportunities to integrate DCE into multiple learning areas, the onus is still on teachers to enact DCE in their learning area. The aim of this practice notes piece is to support teachers by indicating how *NZC* and the content focus of the different learning areas offer space to deliver a critical, speculative, postdigital form of DCE.

Introduction

The values, principles, and competencies of *The New Zealand Curriculum* (*NZC*) (Te Tāhuhu o te Mātauranga Ministry of Education, 2025) offer implicit consideration of how processes of seeing, knowing, and being are impacted by digital technologies. Yet, further links are needed to make explicit acknowledgement of the relational space between humans and the digital. This practice notes piece identifies possible ways of drawing links between curriculum content, digital citizenship needs, and postdigital theory. Practice notes support schools and teachers in their delivery of educational initiatives through linking curriculum- and research-based approaches and can be useful reference points for future planning and content development. Practice notes are especially useful for integrating important but broad and ill-defined education initiatives into teaching practice. This practice notes piece offers an indication of, first, what the main ideas behind a postdigital approach to

digital citizenship education (DCE) in the Aotearoa New Zealand context are, and, secondly, how teachers across the eight learning areas can draw links from curriculum content and key subject discipline elements to postdigital themes and purposes.

Digital citizenship education: A postdigital perspective

Digital citizenship refers to a critical awareness of digital technologies' functions and impact in society (Pangrazio & Sefton-Green, 2021) and attempts to harness the potential benefits the digital offers for the benefit of wider society and distant, future, and non-human considerations (Isin & Ruppert, 2020). Accordingly, DCE involves preparing students with the dispositions, knowledge, and critical skills needed to be active citizens in a digital society. As a concept, DCE builds on citizenship themes that exist across the curriculum to prepare students to meet the challenges of living, working, and studying in a digitally connected world.

While DCE promotes critical engagement with digital technologies, the postdigital promotes a critical reflection on the entanglement of digital technologies across political, economic, social, and academic contexts (Knox, 2019). The postdigital can be characterised as both a condition, defined by the inseparability of digital and nondigital life (Jandrić & Knox, 2022), and a theory, which seeks to critically unpack the relationship between digital and human (Fawns et al., 2023). This theory can be used to critique narratives in DCE which uncritically advocate the digital as a potent source of increased efficiency and development and instead highlight alternative understandings of the digital and speculate about possible alternative narratives (Webster, 2024).

NZC offers scope to develop a postdigital, speculative form of DCE (Webster, 2023). A speculative DCE approach seeks to empower learners with a critical awareness of how digital technologies enframe meaning, and the impact this has on their understanding of possibilities in present and future societies, while balancing critical thinking with optimism and hope (Webster, 2023). A speculative DCE approach incorporates a postdigital positionality to go beyond developing digital literacy or skills to prepare students for a future workforce. Speculative DCE aims to use the content and objectives of existing curricula as a springboard to envision potential issues, opportunities, and ways of being with digital technologies and create the possibility of transformation with digital technologies.

Speculative DCE in *NZC*

NZC is split between the "front end" of the curriculum, that details the values, principles, skills, and key competencies that are applicable across the curriculum, and the "back end" which details the content and objectives of the eight learning areas. The "front end" of the curriculum outlines a vision of ideal student outcomes. DCE, with its strong links to values that support citizenship and active participation in society, relates to aspects of the visions, principles, and values of *NZC*. Speculative DCE is implicit within principles such as *future focus*, *learning to learn*, and *high expectations*, while it also relates to values that emphasise responsible, respectful behaviours, and developing good citizens. Speculative DCE also holds a significant footing in the key competencies of *NZC* as digital technologies frame how students make sense of information and construct knowledge, how they express themselves and their views, and how they contribute to a community of diverse others. These values, skills, principles, and key competencies are suggested to be developed concurrently in the eight learning areas, both as an end goal and as a means to achieve schools' curriculum goals.

Learning areas

NZC advocates developing key competencies in relation to students' contexts, interests, and practices among the eight learning areas. *NZC* describes the eight learning areas as having distinct language, knowledge, and ways of knowing. Each of the learning areas offers to develop critical awareness of the influence of digital technologies and to consider the implications of the current course of digital technology use.

English

Since the English curriculum refresh, there is a greater emphasis on critical thinking skills and the importance of interpreting text (Minstry of Education, 2023). Existing concepts, like determining the purpose of a text, could be expanded to encompass online multimedia content (Gerrard et al., 2024). This could include discussion about detecting bias online, cross-referencing sources, targeted advertising, and potential instances of mis- and disinformation. McGrew and Breakstone (2023) advocate for "civic online reasoning" to develop students' appreciation of the need and ability to effectively search

for, evaluate, and verify social and political information found online. The goal is to show students the importance of cross-referencing information found online and to equip them with the skills needed to distinguish reliable information from mis- or disinformation. Ultimately, deconstructing and critically interrogating texts can engender an understanding of the power of narratives, language, and frameworks of meaning over their own and others' perceptions of the world.

Creative tasks in English also offer the opportunity for students to consider and reflect on the role of digital technologies in society. Science fiction has long been a genre that provides critical commentary on technological advancements and their potential impact on humanity. In the context of the postdigital world, science fiction offers opportunities to examine the blurring lines between the digital, physical, and biological spheres. It allows students to question and reimagine the future of education, social structures, and even our own human identity by anticipating various scenarios for the future, including the probable, possible, and preferable outcomes of our current digital technological trajectory. In essence, the intersection of science fiction and the postdigital world presents an opportunity to engage in speculative DCE, examining and questioning how transforming current narratives inform and shape our understanding of technology and society.

The Arts

Similar to the English learning area, the Arts offers space to explore postdigital imaginations. Suoranta et al. (2024) suggest postdigital imaginations can be emancipatory practices that encourage us to envision alternative realities, problems, and solutions to contemporary challenges, such as environmental destruction and pandemics. Creative pieces can both look beyond the limitations of current technologies to consider behaviours, dangers, and hopes that future digital developments might offer and also offer a critical commentary on the current postdigital condition. For instance, students can be encouraged to consider how the manipulation of images, videos, and audio, including the creation of deepfakes and AI-generated content, can significantly alter the perceptions of people, places, and ideas (Gerrard et al., 2024).

NZC acknowledges that knowledge and meaning in the Arts learning area is often mediated through technologies, prompting critical reflection on the

relationship between digital technologies and artistic expression. Digital technologies have seemingly expanded students' creative capacities, enabling them to produce multimodal outputs from the art they create. Yet, while digital art forms such as virtual reality (VR) and augmented reality (AR) can transcend the limitations of physical space, they also eliminate the tactile experience of interacting with physical artwork. A central question concerns whether digital technologies drive creativity or whether they replace or constrain students' creative practices. Students can be encouraged to consider whether there is an overreliance on digital technologies, which can limit an artist's ability to experiment with different mediums and styles.

Health and Physical Education

In Health and Physical Education, engaging in personal wellbeing and safety, positive interactions with others, and monitoring fitness and physical activity all require a critical reflection on the digital. Given the increasing number of influencers and self-proclaimed health "experts" online, it is crucial that students are able to critically assess any advice they encounter online. Health lessons also open up critical spaces to reflect on what a healthy relationship can look like in-person and online, and the reality of human relationships in digital spaces. In areas such as sex education and relationship building, digital interactions necessitate a nuanced understanding of how technology shapes our communications and connections. The comfort and anonymity of online platforms can lead to community building and genuine self-expression, yet there is also evidence of artificial representation of self and teenagers sharing more online than what they would share in face-to-face interactions (Lupton, 2021).

Equally, the ubiquitous digital monitoring facilitated by devices like smartwatches raises ethical, legal, and welfare questions, particularly regarding how such surveillance may influence our perceptions of health and wellbeing. Studies have shown that teenagers using digital health devices focus on calorie counting, with participants expressing concern that they were becoming obsessive about their calorie intake often resulting in feelings of guilt, anxiety, failure, or disappointment in response to the metrics generated by the app (Lupton, 2021; Trnka, 2016). Students can therefore be encouraged to consider whether using digitised and quantified data to generate an understanding of their fitness and health is the best approach to "connect" with their health.

Learning Languages

At the intersection of the Language Knowledge and Cultural Knowledge strands, there is an opportunity to consider how meaning is made and conveyed with digital technologies. For instance, examining outputs from digital translation applications for word choice, emphasis, and connotation can lead to a collaborative critique of the translation, focusing on its strengths, weaknesses, and how a human might translate it differently. Prompting students to consider whether linguistic or cultural connotations have been adequately accounted for in the translation opens up spaces for critical reflection on digital technologies and their ability to capture sentiment and meaning.

With digital technologies and artificial intelligence (AI) systems based on data gathered from across the world, it is vital that teachers contextualise their lessons to their students and their environment (Jandrić & Ford, 2022). In Aotearoa New Zealand, AI provides both opportunities and specific threats both to Māori and to Pasifika groups. AI systems such as translation services produce content often without properly acknowledging the sources or respecting creators' copyrights, which can infringe upon Indigenous people's data sovereignty rights and exploit their cultural and knowledge heritage. Students can therefore consider the potential issues regarding developments in digital language learning and importance of digital data sovereignty and the rights of Indigenous communities over their language and cultural heritage.

Mathematics and Statistics

The potential for misrepresentation or manipulation of information, ideas, and events through statistics, graphs, and figures necessitates a critical approach to the use of digital tools in the Mathematics and Statistics learning area (Gerrard et al., 2024). Efforts have been undertaken to strengthen the link between data, computational thinking, algorithmic thinking, and the Mathematics and Statistics learning area (Smith et al., 2023). There is an emphasis on problem solving, abstraction, generalisation, modelling, and algorithms. Yet it is crucial to encourage students to question assumptions inherent in digital tools, such as the influence of algorithms or software on problem-solving strategies and meaning making in the world. The incorporation of real-world scenarios in teaching can illustrate the potential misuse of digital technologies or their unintended consequences (see Parker (2021) for numerous examples).

Reflective practices where students analyse the use of digital technologies to solve mathematical problems can help them become more aware of overreliance on these tools and consider possible alternative approaches (Engelbrecht & Borba, 2024).

Science

The Nature of Science strand calls for overarching engagement with the scientific process as a way of knowing, which opens up the possibility to examine how knowledge is produced within and beyond the field of science. For instance, the process of scientific inquiry, or its absence, is a critical consideration when evaluating online information (Gerrard et al., 2024). The interconnectedness of society and technology highlights how scientific advancements and digital technologies reciprocally influence each other and shape societal norms and behaviours. The current trends towards AI, efficiency, and customisation are likely to shape future meaning making and understandings in science and society; for instance, the use of AI in biotechnology (Holzinger et al., 2023). Speculative methods, involving the transformation of facts into ideas through hypothesising, can facilitate engagement in the complex political, social, cultural, and technological dimensions that produce inequalities and reinforce existing power imbalances (Ross, 2023). Students can critically reflect on the implications and merits of valuing trends towards AI, efficiency, and customisation in meaning-making processes.

Social Sciences

The Social Sciences examine place, identity, continuity, and change and systems of power, all of which have become highly digitised in a postdigital society. These are complex systems in which digital technologies hold influence over knowledge, agency, and behaviours. Within complex systems, students need to be able to identify influential components without disconnecting them (Fawns et al., 2023). Politics, culture, wellbeing, economic systems, and knowledge are all entangled with the digital. Again, real-world examples can illustrate the influence digital networks have on ideas, events, and movements.

Without seeking news or information on local and national issues, young adults regularly encounter news through digital platforms' algorithms proliferating influential voices across their platforms (Notely et al., 2023). As with the

English learning area, civic online reasoning is a valuable practice both in media studies and in history to critique online sources of information, interrogating their accuracy and the potential intentions of the source. Discussions about what democracy looks like in a postdigital society, who the powerful actors are (both human and digital), and what can be done to engender greater representation and fairness with digital technologies can develop further awareness of the challenges the digital presents to citizenship. Students can also consider the digital as "material", and the increasing attention paid to issues of labour and the exploitation of natural resources required to produce digital technologies in order to envision more socially just futures.

Technology

The introduction of the new digital technologies curriculum content has placed a greater emphasis on understanding, designing, and considering the implications of digital technologies in the Technology learning area. The focus on digital systems creates the opportunity for learning in Technology, in particular in the Nature of Technology strand, to build on issues raised in relation to Social Sciences, integrating the ethics and technology of algorithms, AI, and targeted advertising, and examining how these elements shape the online environment. The world contains patterns of injustice that are reflected in data; algorithms often reproduce and amplify these injustices. Students can reflect on what kinds of rules and standards should govern digital platforms and their algorithms, as they are not neutral technologies but political ones that can be used to serve particular policy objectives and ideologies.

Students can also consider the interconnectedness of their own digital environments. Young adults' environments are filled with pervasive digital technologies, such as computers, smartphones, microphones, speakers, Wi-Fi connectivity, AI, and digital surveillance. Students can be encouraged to consider both the mechanisms of these digital operational systems and their impact on behaviours, wellbeing, and possible futures. For students to become creators of, not just users of, digital technologies, requires speculating about possible outcomes based on current technological trajectories and being encouraged to consider possible solutions and alternative possibilities.

Conclusion

While this short article has suggested possible avenues to integrate speculative DCE into existing practice, DCE remains an undervalued, often implicit extension to curriculum content. The entanglement of digital technologies across public and private life suggests that a more explicit focus on preparing students to develop into critically engaged digital citizens is warranted. This practice notes piece has shown that engagement in a critical, speculative, postdigital form of DCE is possible in and across each learning area. The issues associated with digital technologies are not limited to one field; therefore, DCE should not be isolated in one learning area.

Despite links between the curriculum and DCE being made, teachers are still expected to engage with DCE as non-specialist digital citizenship teachers. While this practice notes piece offers support for teachers to engage in DCE practice, further research and work to increase teachers' support is needed. Future studies can explore how to support teachers through national frameworks, such as Ministry of Education supported modules and documents, and more local support, such as training and professional learning and development-based context-specific interests and demands.

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The author

Jack Webster is a doctoral student at The University of Auckland's Faculty of Education and Social Work. His research interests lie in the complex relational space between humans and digital technologies. His current research focuses on teachers' perceptions of digital citizenship education and the narratives influencing their perceptions.

ORCID: 0009-0009-0482-7420, **Email**: Jack.webster@auckland.ac.nz