From Books to Bots: Scaffolding Ethical and Critical Use of Generative Artificial Intelligence

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Introduction

The evolution of Artificial Intelligence (AI) tools leapt into the everyday world during 2022. Open AI launched DALL-E 2, a text to image model that generates realistic images and art from a natural language description in April, followed by the release of text to video models by Meta and Google in October. In December, social media was afire with examples of outputs from ChatGPT – a chat bot that can participate in discussions and respond to questions in a way that mimics human conversation. These tools are challenging accepted practices across numerous disciplines, including education (Kovanovic, 2022). As leaders in information and digital literacies, those working in school libraries are challenged to understand the potential of these tools as they model and scaffold learning and teaching strategies that encourage students to be critical and ethical creators and consumers of information (Wall, 2022).

Statement of the Research Problem

Historically, teacher librarians (TLs) have been leaders in the implementation of digital technologies in schools (Branch-Mueller & deGroot, 2016; Lee & Twomey, 2011). Therefore, as access to generative AI tools such as DALL-E2 and ChatGPT grows, it is likely that those who work in school libraries will be expected to develop their awareness of these tools' potential and the implications they have for learning and teaching.

With no extant research investigating the implications of these tools for the role of the TL, this exploratory research project uses a case study approach and the systems technique of CATWOE to explore three different freely accessible generative AI tools. This research seeks to respond to the question:

How might teacher librarians use generative AI tools to scaffold students' skills as critical and ethical users and creators of information?

Literature Review

Understanding the implications of generative AI tools for learning and teaching requires a foundation in what these tools do, and how they do it. Generative AI is a category of AI that can create new content including text, images or multimedia. Trained to perform a single or focused task, these tools represent what is known as Narrow AI (Wong et al., 2020). Far from science fiction, they are not super-intelligent machines that replicate the potential of the human brain (Siemens, 2022). Despite this, generative AI can perform specific tasks with efficiency, speed and effectiveness far beyond human capabilities (Southgate & Judge, 2022). Generative AI systems are trained upon huge data sets found online, including books, websites and discussions (e.g., Reddit forums) and use machine learning algorithms to produce original outputs (Forsyth, 2022; Susnjak, 2022).

TLs are well positioned to support teachers in understanding more about AI. They have expertise and play a leading role in promoting information and digital literacies within the school (Australian Library and Information Association, 2016; International Federation of Library Associations and Institutions, 2021). These literacies help teachers and students locate, evaluate, organise and use information critically and ethically (Laretive, 2019);

fundamental skills for high quality learning where access to generative AI tools is easily available.

Methodology

This research uses a qualitative multi-case study approach (Simons, 2009) to deeply investigate three generative AI tools: PerplexityA.I, Quillbot and ChatGPT. A multi-case study approach allows us to understand the complexity of each of these tools in a holistic way (Thomas, 2016) and to consider the ways in which each tool might be used by the TL in practice. The tools were chosen as they are all currently free to access and represent different stages of the information process –locating information, selecting, evaluating and organising information and synthesising and presenting information (New South Wales Department of Education, 2022).

Each platform and its potential output were analysed using the Soft Systems Methodology (SSM) technique CATWOE – an "action-oriented process of inquiry into problematic situations in the everyday world" (Checkland & Poulter, 2006 p.22). CATWOE represents the terms Customer, Actor, Transformation process, Weltanschauung, Owner and Environmental constraints (Checkland & Poulter, 2006). Consideration of these elements allowed for an in-depth exploration of the platforms, including the different perspectives and assumptions these emerging tools generate, and their implications for the TL and teaching and learning practice.

Preliminary Findings & Discussion

Initial findings of this research suggest that the TL can play a vital role in empowering teachers to navigate these rapidly developing technologies. After a preliminary exploration of these tools, it is evident that each one creates different opportunities for learning, but also poses a variety of challenges to established pedagogical approaches and assessment methods. New strategies for seeking, analysing, synthesising and creating information are presented by these platforms, inspiring greater need for collaborative engagement between TLs and class teachers.

In addition to teaching and learning *with* generative AI tools, preliminary findings also suggest the need for TLs to update digital literacy and citizenship programs to teach users *about* AI. Closer engagement with each of these platforms indicates wider social and economic ramifications, with implications regarding copyright, data privacy, algorithmic bias and environmental impact. The TL's knowledge will inform algorithmic and AI literacy development as an essential part of programs developing students 21st century capabilities.

Implications and Conclusions

The use of AI in school education is still in its infancy (Southgate et al., 2018); however, there is an increasing expectation for teachers to become "AI Ready" – able to integrate AI safely and effectively into student learning, teaching students about how AI works and the importance of using these powerful tools ethically (Luckin et al., 2022 p. XIV). This research project acknowledges the leading role TLs can play in shifting mindsets and practice regarding generative AI platforms and will provide the groundwork for future investigations which more deeply investigate specific implementations of these or other similar tools.

While the initial response of school systems might be fight (locking down access) or flight (pretending these platforms do not exist), a planned and informed strategy for embedding AI capabilities into educational practice, led by the TL as an information and pedagogical expert, is more likely to bring about long-term positive outcomes for students who will be learning and living in a world increasingly shaped by algorithms and automation.

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