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Bridging Resource Gaps in Adult Education: The Role of Generative AI

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Generative AI (GenAI) refers to the production of entirely new creative works, such as text, pictures, music, or poetry, in response to simple prompts (Lanxon et al., 2023). Some view GenAI as a disruption to our education system, pointing to biases in the training data, concerns about misleading or inaccurate information, challenges to educators, as well as issues of personal safety and privacy (Weil, 2023, Yu & Guo, 2023). In adult foundational education, where teacher capacity and resources are limited, AI-powered edtech tools have the potential to support the rapid creation of high quality, tailored, and engaging materials for instruction and assessment in any learning context. This article aims to provide insight into adult educator perspectives on the use of GenAI as well as highlight edtech tools and features that educators can use to strengthen their instructional design skills and more effectively meet diverse learner needs.

The pandemic made clear that adult educators need to build capacity as instructional designers, leveraging research-based instructional frameworks and digital technologies to enhance learning opportunities (Vanek, 2022). When ChatGPT was released to the public in 2022, educators began to experience the powerful capabilities of new GenAI tools and features. Advances in AI-powered tools—such as ChatGPT, Dall-E 2, or Synthesia—can assist educators by automating tasks like assessment, communication, and resource creation, providing more time and space for creativity and efficiency in instruction (Atlas, 2023; Zhai, 2023).

Growing evidence reveals that AI-powered technology, used ethically, can promote greater equity, access, and quality learning in education, especially when educators' professional judgment and learners' experiences are centered in the design and features (Rochelle et al., 2021). Research about the impact of GenAI on adult learning outcomes is just starting to emerge. Leiker et al. (2023) explored the use of the GenAI video creation platform to create instructional videos in a micro-learning course. The experiment—which was conducted in an online professional learning setting for technicians, engineers, and administrators in the battery industry—aimed to understand the impact of AI-generated instructional videos compared to traditional instructional videos created by trained teachers. Importantly, the course content was developed by human subject matter experts who knew the learner population, then used the platform Synthesia to generate text-to-videos with photorealistic synthetic actors, essentially avatars that look like real instructors.

Results indicate significant improvement between

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pre- and post-learning assessments among those who viewed the traditional video recorded by an instructor and the AI-generated video, with no statistical difference in terms of learning gains (Leiker et al., 2023). Findings suggest that AI-generated learning videos could be an effective substitute in online educational settings. With GenAI, the rapid and affordable production of instructional materials has the potential to address some of the most significant resource gaps in adult learning communities, such as geographically remote and/or incarcerated settings.

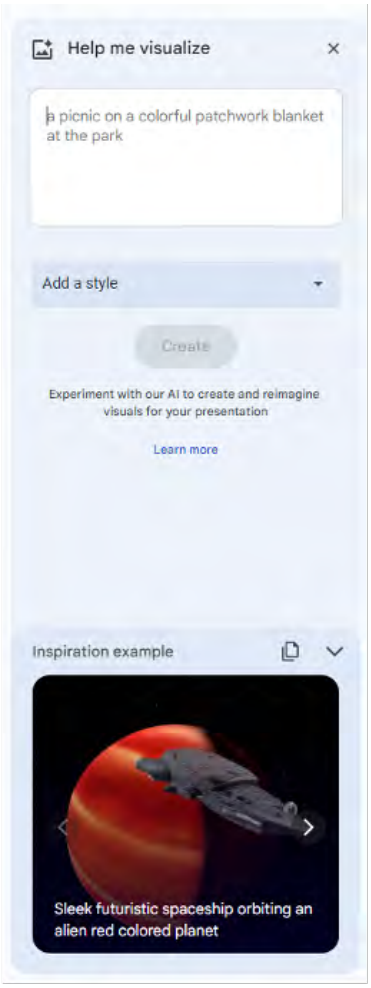
At First Glance: The Adult Educator Perspective on GenAI

In response to the growing interest in AI for adult education, The EdTech Center @ World Education recently launched Leveraging AI for Learning and Work, an initiative focused on gathering information, facilitating collaboration, and supporting efforts to design and use AI responsibly and equitably in adult education and workforce development. To inform this initiative, the EdTech Center conducted a brief survey among over 400 educators who self-selected to participate in the EdTech Bytes: GenAI webinar series. While responses are not representative of all adult educators, they provide an insightful sample of teacher perspectives. Most survey respondents found GenAI to be useful for enhancing productivity, design, writing, and teaching, and almost half indicated that they are "just figuring this out." Over 75% of respondents felt GenAI has the greatest potential to support adult learning and education in content creation and as a teaching tool. While more research is needed in this area, this preliminary pulse check indicates that educators see value in further exploring GenAI technology to meet the unique needs of adult learners.

Exploring GenAI in EdTech Tools

GenAI-powered features are being built into the most popular edtech tools at a rapid rate. Google launched Google Labs, a suite of GenAI features that will be built into the Google tools that countless teachers use every day (see example in Figure 1). The well-known app Kahoot now has a built-in question generator powered by GenAI. Padlet was ahead of the game when it released the I Can't Draw feature in 2019 which uses GenAI to generate images based on text descriptions. Most recently, the popular design tool Canva has swiftly added features that support users in generating text, images, and layouts in their designs.

FIGURE 1: Screenshot of Labs feature "Help me visualize" in Google Slides



GenAI in Popular EdTech Tool Canva

Canva is a free design tool used by creators, marketers, and teachers. In 2023, Canva released GenAI-powered Magic features, including Magic Design, Magic Write, and Magic Edit (Adams, 2023). In line with several major tech companies like OpenAI, Adobe, and Google, Canva also integrated a text-to-image feature. For free and in real time, teachers can enter any text prompt, such as "woman at the bank handing a credit card to the bank teller" (Figure 2) and conjure image options in a variety of styles. With Canva Text-to-Image, teachers can quickly generate images to facilitate learner comprehension, enhance the learning experience, and increase accessibility for adult learners, promoting visual literacy competencies and skills, foundational reading, writing, and digital skills (Guglietti, 2022).

FIGURE 2: Screenshot showing Canva's Text-to-Image feature, outlined in red

Without GenAI, finding free images to create instructional materials or facilitate understanding in real time can lead to cumbersome internet searches, never mind the challenge of determining whether the image is in the public domain or openly licensed. While the latter is made easier by sites such as Unsplash (World Education, n.d.), the terms of use on image repository sites can be difficult to understand, leaving teachers uncertain about whether and how they are permitted to use the images they find. To date, Canva makes no claim over images generated using the Canva Text-to-Image feature. That means that teachers can use a single free tool to request a specific image without second-guessing their ownership of that image. This free access to images, if used responsibly, has the potential to address a key resource gap in adult learning: relevant and representative images.

Relevant and Representative Images

AI image generators, such as Canva's Text-to-Image feature, can be used to create images in adult learning contexts that ultimately support adult learner factors such as a sense of belonging and reduce stereotype threat (Digital Promise, n.d.). With Canva, teachers can effortlessly add images to slides, worksheets, or digital whiteboards that depict adults engaging in tasks that are relevant and contextualized. On a math worksheet, for example, an image of an adult performing calculations on the job could motivate and engage learners, making a direct connection to important competencies. In an ESOL classroom, teachers might quickly develop visually stimulating imagery that supports vocabulary comprehension and practice activities. Before applying use of the tool, though, teachers should consider two pitfalls of AI-generated images: bias and hallucinations.

Bias and Hallucinations

A recent study found that whiteness and masculinity were overrepresented in three text-to-image GenAI models. Notably, one of these models, Stable Diffusion, is what underlies Canva's Text-to-Image feature and was found

to be more diverse than OpenAI's popular tool, DALL-E 2 (Luccioni et al., 2023). Tech developers are reportedly working to mitigate bias in AI, and in the meantime, we recommend three human-centered strategies to responsibly use GenAI to increase diversity in educational resources:

1. **Involve learners.** Giving learners voice and choice in developing diverse materials serves the dual purpose of increasing representation while engaging learners in an activity that builds English language and digital literacy skills. Learners could write a passage about their hometown or country and use Canva to generate an image to include with their writing, reflecting on the results together. In a workforce preparation class, learners could generate images of specific occupations and examine the degree of homogeneity in the results. No matter the context, time should be dedicated to critical reflection in which learners can express successes or pitfalls they encountered when using GenAI.
2. **Refine prompts.** Specificity and detail in text prompts give human users more control over image results, avoiding ambiguity that leaves room for algorithmic bias. Write text-to-image prompts with specific outcomes in mind and be as descriptive as possible, especially when eliciting images of humans. A prompt that says "construction worker" might result in obviously homogenous results, like those shown in Figure 2. Adult educators, though, who are familiar with the diverse backgrounds, stories, and experiences of individual learners can draw on real students and real stories to write descriptive prompts that are authentic to adult learning contexts and factors. While not GenAI specific, resources like OER Common's Tool for Identifying Bias in Sources can be utilized to provide objective and critical insights (Germán et al., 2021).
3. **Discuss results.** Collaborating with other educators in a community of practice to share experiences and compare outcomes is an effective way to expand awareness of human-centered approaches for mitigating bias. Many existing professional development approaches at various levels of formality support effective edtech implementation and can and should be applied to the use of GenAI-powered tools. Service learning in an EdTech Maker Space is one example of how educators can work together to generate resources and build skills with edtech (Maddrell et al., 2023). A common EdTech Maker Space activity includes the comparison of the affordances of various edtech tools to generate a specific educational resource. This activity would be valuable for strengthening our ability as a field to responsibly leverage GenAI (see example comparison in Figure 4).

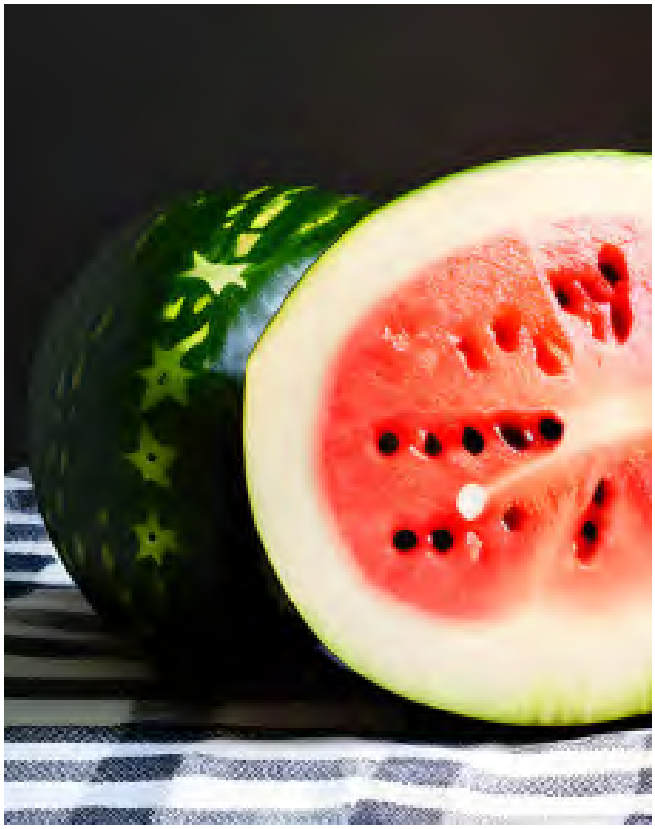
FIGURE 2: Images generated by Canva's Text-to-Image using prompt "construction worker"

FIGURE 3: Results from the prompt "worker in STEM" from Canva's Text to Image (left) and Padlet's I Can't Draw (right)

In addition to the potential for bias, educators must be mindful that GenAI images can "hallucinate" which describes an AI response that is inaccurate despite appearing to be dependable, whether from a chatbot, text-to-image generator, or otherwise (U.S. Government Accountability Office, 2023). An illustrative example of this can be seen in Figure 4 which shows an image that was generated in Canva using the prompt, "shelf at a grocery store containing apples, oranges, pears, bananas, grapes, strawberries, watermelon." In a beginner ESOL class, this kind of image could be helpful for vocabulary practice activities like labeling the items in an image. Such an activity would really backfire if watermelon were to be depicted in the way that it is in Figure 4, with tall green stalks that resemble a kind of leek-watermelon hybrid. Like any new technology, educators are encouraged to test and explore its use and develop workarounds to fit their needs, like prompting the tool to depict a "watermelon" and avoid the term "shelf" altogether as in Figure 5.

FIGURE 4: Example of hallucination generated in Canva's Text-to-Image

FIGURE 5: Image generated in Canva using the prompt "watermelon"



Conclusion

The applications of GenAI are wide-ranging, from text generation to image, video, and music generation. AI has the potential to support complex learning experiences with multiple people and resources and augment human abilities in a variety of learning contexts (Rochelle et al., 2020). As with any new and emerging technology, educators need to prioritize learning goals over tools and ensure that the use of GenAI tools and features supports learners in meeting their unique and diverse learning needs and aspirations. Further, digital learning experiences and programs must be designed with a trauma-informed lens given the glaring inequities in access to digital literacy skills and technology among adult learner populations (Housel, 2023). Efforts to integrate GenAI technology in adult education should advance educational goals, while evaluating and limiting key risks to the educators and learners involved (U.S. Department of Education Office of Educational Technology, 2023).

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