

**Prompt to Product: Student Perceptions of Generative Artificial Intelligence in Design**

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### **Introduction/Need for the Innovation**

Professionals and instructors face a unique challenge in confronting the place that generative artificial intelligence (AI) has within the realm of graphic design. Generative AI is a technology that automatically generates content, whether visual or literary, based on a prompt provided by the user (Oppenlaender, 2023). Concerns regarding ethics, accuracy, and creativity are discussed in the graphic design industry, while proponents of generative AI emphasize increased efficiency and higher-quality products (Engawi et al., 2021). As AI becomes more prevalently used as a resource, educators teaching graphic design are finding themselves asking how to train students to effectively use such tools (Peres et al., 2023). The rapid integration of AI is already altering traditional norms within education, and both students and professionals are finding a greater need for AI digital literacy (Lui & Xie, 2021). As instructors work to prepare the next generation of graphic designers in the agriculture industry, they must implement training in AI tools and guide students to think critically about the role AI has in their work, both as students and professionals. This abstract describes the activities undertaken to train students in the use of generative AI and their perceptions in an agricultural communications graphic design course.

### **How It Works**

Undergraduate students enrolled in Graphic Design in Media and Agriculture Industries at Utah State University spent three 75-minute class periods using Adobe Creative Cloud's generative AI tools in Firefly and Illustrator to create images and vector artwork. On Day 1, students wrote and refined prompts in Firefly to generate four image variations, select a favorite, and edit the image by adjusting settings for aspect ratio, aperture, shutter speed, and field of view. They also uploaded an image to incorporate into the generated image, customizing the color and tone, lighting, and camera angle. Using the generative fill tool, they erased objects and added new objects to an image. On Day 2, students created vector artwork using three generative AI features in Illustrator: (a) text to generative vector subject, (b) text to generative vector scene, and (c) generative recoloring of vector artwork using text prompts. After the generative AI activities, students responded to 15 open-ended questions about their experiences, the role of creativity, how prior coursework informed their process, benefits, and challenges or ethical concerns with the generative AI tools. On Day 3, students participated in a role-playing activity focused on generative AI graphics where they were assigned one of four roles (company CEO, content creator, photographer/designer, or consumer) related to a company that offers generative AI tools to create images or filters that change how someone or an object looks. They read more about their role and three articles on the pros and cons of AI-generated artwork, biases and stereotypes, and whether AI-generated art can be considered art. Students engaged in small- and large-group discussions to reflect on how generative AI art impacts these roles and identify ethical concerns. Following these lessons, they could apply generative AI tools to design a photo composite and either a poster or an ad.

### **Results to Date/Implications**

Results are derived from 21 students' responses to the open-ended questions during the fall 2024 semester. Student responses revealed these benefits to using generative AI tools in graphic design: (a) easy removal and inclusion of elements using the generative fill tool, (b) increased creativity due to greater options for image creation, (c) greater efficiency and speed in the creation of images, (d) simple processes to change image style or color, and (e) permitted the creation of specific photos without needing stock images. One student recognized the benefits of developing generative AI skills, stating, "You can play with options and different versions without having to commit a huge amount of time to creating or editing these images on your own." Another student said, "AI supported me in gathering my vector artwork by giving me a photo with exactly what I put in the prompt." Students also identified these limitations of using generative AI in graphic design: (a) difficulty in editing due to uniformity of changes, (b) created graphics appearing fake or unrealistic because of filters, colors, or lighting, (c) production of robotic-looking flaws, (d) necessitated precise prompts due to ease of misinterpretation, and (e) limited variations within generated content. Multiple respondents acknowledged the learning curve when developing prompts. One student noted, "AI often misunderstands our prompt." Another student said, "It was a little hard coming up with prompts, but once I did, it gave [me] multiple ideas that I could use. I think using specific words was most useful." Students generally perceived AI-generated images in Adobe Firefly as realistic, especially at first. However, added objects sometimes disrupted realism when lighting or placement did not blend naturally with the background. Certain elements, like animals or applied effects, also made some images appear more like art or cartoons. Generative AI tools in Adobe Firefly and Illustrator enhanced creativity by offering flexibility and broad possibilities for image creation and editing. Students used the tools to remove unwanted objects, create specific images, and adjust designs to their preferences. However, some noted that AI-generated images sometimes appeared robotic or misaligned with their creative vision, underscoring the need to strike a balance between AI assistance and human creativity.

### **Future Plans/Advice to Others**

As generative AI tools continue to develop and influence graphic design, agricultural communication instructors and students will need to stay abreast of best practices and ethical implementation techniques. AI can only be as effective as the professional or student utilizing it (Mollick & Mollick, 2023). It is our duty as researchers and educators to continue innovating and critically analyzing, so we will continue to update the activities and use Adobe Creative's generative AI tools in the course. We recommend that instructors and students run the prompts through an AI prompt generator such as ChatGPT or Prompt Genie.

### **Costs/Resources Needed**

Students need a computer, Internet access, and an Adobe Creative Cloud account, which some institutions provide to instructors and students. Student pricing for Creative Cloud Pro is \$69.00 per month otherwise. Instructors may benefit from dedicating time to explore the generative AI tools in Adobe Firefly, Adobe Illustrator, and Adobe Photoshop. The instructor also developed the PowerPoint lessons about Adobe's generative AI tools, instructions for each activity, and reflection questions. The instructor provided these materials through a learning management system.

## References

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