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Teaching Case:

A Teaching Case of Engaging GenAI for Co-creation: Image Generation and Poster Design

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Hook

"AI won't replace humans – but humans with AI will replace humans without AI" (Lakhani, 2023). Using AI for problem solving and engaging with a variety of tasks is becoming a critical skill for future work. More importantly, learning how to collaborate with AI rather than allowing AI to lead is vital. This teaching case presents embedding image generation and poster creation with Generative AI into classroom projects to teach collaborative and co-creation skills. Students are taught fundamentals of prompt engineering and then use those skills to design and evaluate the GenAI output to create a poster.

Abstract

Since ChatGPT was initially introduced in 2022, a variety of Generative AI (GenAI) applications (apps) and tools have been released. To foster the skill of co-creation and collaboration with GenAI, we designed a project-based task to create posters. To let students learn the skills and explore the AI tools, we embedded image generation into two projects in an introductory course of business operations and supply chain management. In this paper, we describe the GenAI task requirements, GenAI apps/tools used, and the students' learning outcomes from the task.

Keywords: Generative AI, ChatGPT, Prompt engineering, Image generation, Business operation and management.

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1. INTRODUCTION

Generative AI (GenAI), such as ChatGPT and Google Gemini, is an innovative technology transforming business, industries and educational practices. Since the first release of ChatGPT in November 2022, both the number of GenAI apps/tools and the functions of these GenAI tools have been evolving quickly. Within pedagogical circles, educators have proposed and experimented on methods for incorporating GenAI into teaching and learning (e.g., Firth & Triche, 2024; Huo & Siau, 2024; Petrovska, et al., 2024; Van Slyke et al., 2023; Xu, 2024). For example, Firth and Triche (2024) designed and implemented a project for an entry level MIS class requiring teams to create a short video to describe what Management Information Systems is. Students needed to use text prompt to generate a photo-realistic avatar, create scripts of explaining MIS, translate the text script into a voice using a voice generator, and then put all together in an AI-generated video. The teaching case by Firth and Triche is using GenAI for content generation. Our case is also about content generation, but in a different context: product design and marketing.

In our introductory course of business operations and supply chain management, we implemented two projects. For Project 1, teams created a business plan to make a physical product. One task for the project was to create images to illustrate sample products, and a poster of the product by using AI generated images. For Project 2, teams needed to find a local business, interview the employees and report on the organization's supply chain and business operations/processes. As part of Project 2, teams created two posters for their chosen business: one poster with an AI generated image, and the other without using AI.

Embedding the learning within a project instead of an individual assignment is based on two reasons. First, the project provides a real-world context for image generation by offering a boundary, real-world limitations and general guidance for creativity. This allows the students to use GenAI within the confines of real-world situations, rather than a sanitized situation. Second, the evaluation of the images and posters is grounded within a specific business context for each group, implying the evaluation of the output for each group will vary. This is intentional because the image and poster creation is a creative process deserving of a flexible evaluation, rather than a restrictive one which often results in student submissions all resembling one another.

We integrated the two projects for two semesters into multiple sections. For the remainder of this paper we introduce the course, describe the two projects, discuss the image/poster-making requirements, and report the project results, our reflections, and potential improvement of the GenAI creation activities for future classes.

2. COURSE CONTENTS AND TWO PROJECTS

Our course is a second-year core course for all undergraduate business students. It is offered in traditional face-to-face mode. The course provides an end-to-end overview of business operations and supply chain management: from sourcing, manufacturing, to delivering goods and services with support from supply chain, accounting, finance, marketing, and management information systems. One of the learning outcomes is to understand what is involved in the design and development of a product from an operations management perspective. The design of a product includes how a sample product would look like. The task of creating images of the sample product is a great fit for GenAI usage. There is no required knowledge or skills for GenAI part. Many students had some experience using ChatGPT, but few students had experience of image generations or poster creation with GenAI.

To deepen students' understanding about business operations and provide a real-world context, we provided two team projects during the semester. For Project 1, teams are required to make a business plan to manufacture and sell a tangible/physical product so that they can think through the entire process of making and selling a product: defining the product, business strategy (e.g., uniqueness of your product or how your business differentiates from competitors), targeted customers, designing sample products,

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budgeting and pricing, sourcing strategy and suppliers, facility location and layout, manufacturing process, quality standards and quality control, marketing, distributing/selling products, and the milestones for the first three years in terms of company size or sales.

Teams make a poster to advertise or promote the product. While GenAI was allowed for the entire planning process, we only focus on using GenAI to make images for a sample product, and a poster to advertise the product. The poster has the following requirements: Product name, at least one AI generated image, price or price range of the product, location of the company or places where people could purchase the product (teams can make up a location). Please see Appendix A for the poster guideline.

Each team is required to generate at least three images for the poster and select one to be included in the poster. In a Word file, they document their conversation with the AI by including the text for all prompts. This includes the prompts for each image generated, not just the final selection. Students then explain in writing why they chose their final selection.

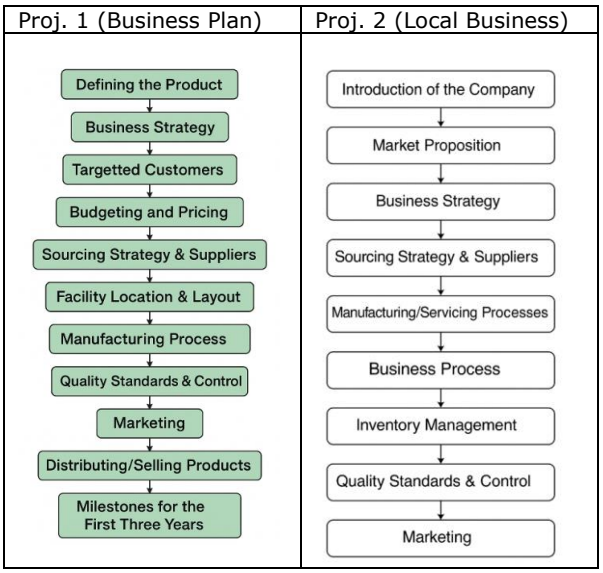

Figure 1. Project 1 and Project 2 content (both diagrams were generated with ChatGPT)

For Project 2, teams needed to select local business and interview employees to obtain information about the business operations. Project 2 included the following requirements: Introduction of the company (e.g., founders, founding year, major milestones of the company history, current company size); company's market proposition (e.g., identifying major competitors and target customers), business strategy, sourcing strategy and suppliers, manufacturing/servicing processes, business process, inventory management, quality standards and quality control, marketing, challenges and improvements, and lessons learned.

Project 1 and Project 2 were allocated 15% and 25% of the final grade, respectively. Each poster with was worth 2% of the final grade.

3. IMPLEMENTATION

Implementation Process

We first implemented the project in the Fall semester of 2024 with two classes, about 90 students in total. Each class was 15 weeks long. Each team had 3 to 5 members; one class had 11 teams, and the other class had 10 teams. There were 9 teams with 41 students in the Spring of 2025. Before the project started, the instructor asked students whether they had experience using GenAI to generate images. Only a few students had experience. To prepare students for image generation and poster-making, the instructor gave a presentation illustrating some sample images and posters.

The sample images were created by the instructor with a website named Taking.AI, which offers several image generation tools, such as Stable Diffusion, SD with LoRA, SD with ControlNets, Dall-E, Flux and Hiddent Art. The instructor showed students images generated by Dall-E 3 and Flux including the text prompt used. At the time the samples were created, the website initially provided free credit for image generation; afterwards, users had to pay. For the project, teams were allowed/encouraged to use whatever tool they felt comfortable with. The instructor also presented some well-designed sample posters from the Internet; these posters seemed to use real images. These designs showed basic visual design principles, such as a color scheme, positioning and proportion of sample products vs. text, contrast between background and text/images, and designs with background image vs. without background image.

After grading the posters for Project 1, the instructor selected well-designed images of sample products and posters from both sections, included them into a presentation, gave a feedback lecture with these images and posters, explaining why each of them was effective visual design, and posted the presentation on the course

website for all teams to learn from.

For Project 2, teams made a poster for a local business by including at least one AI generated image. The purpose of the poster could be a general advertisement for the business, a particular event (e.g., Christmas sales), or a specific product or service.

The instructor was very impressed with some well-designed posters for both projects. Casual talks to students showed that the majority of students liked the GenAI components, therefore, the instructor used both projects again in the Spring of 2025 for the same course. All teams did a great job except for two teams. One poster looked very cluttered, and the other looked somewhat artificial, and thus did not look like a poster for a real company. One team also told the instructor that they hoped they could use the real image of the products in the poster. As a result, we made a change for Project 2 (real business), teams needed to make two posters, one with an AI generated image, and one without. The purpose was for teams to see different effects with or without AI tools. The following sections summarize the learning for implementations across two semesters.

Businesses/Products for the Projects

Teams made business plans for a variety of products, the majority of which fall into one of three categories:

1. Environmentally friendly products that use recycled materials, such as sandals with used car tire for soles, plastic cowboy hats and sunglass frames made from recycled plastic.
2. Key chains made from recycled corks and bottle caps; products made from locally/regionally sourced raw materials and serve the local/regional markets, such as fresh juice truck, burger truck, and fruity beer; or products with minimalism, such as re-usable tote-bag with cotton fabric and simple prints.
3. Products for outdoor activities such as shoes, jackets, facial mask for skiing, knee braces and jumping ropes.

For Project 2, the majority of teams chose to interview a company in retail industry for their project, such as a local store that sells lumber and building supplies, fertilizers, soil complements, teas, or athletic gear; or a chain store operated locally (e.g., Albertsons) and food or service industry, such as a cafeteria, restaurant, bakery, brewery, or healthcare.

GenAI Tools Used

For both projects, teams used a variety of apps/tools as listed below:

- Google Gemini
- ChatGPT
- Takin.AI
- Media Magic
- Midjourney.com
- Imagine.art
- Co-pilot
- Adobe AI
- Canva AI

The quality of AI-generated images was usually clear and sharp, but for the term of 2024, the words/texts on the images were either unclear (e.g., letters with broken strokes) or incorrect (e.g., "thrifted' would be spelled as "thriftd" or "thrifhd"). Therefore, instead of using one GenAI tool to generate a complete poster, many teams used Canva.com to add text and do final touch-ups for the poster. However, between Fall 2024 and Spring 2025, GenAI evolved quickly. ChatGPT and other apps could generate images with correctly spelled words with high quality. Therefore, some teams simply used one GenAI tool to generate the entire poster without using another tool to assemble or touch up. With the image quality increased, the waiting time for image generation increased too. We noticed that in 2024, the waiting time for one image generation was usually under 10 seconds or so. However, in 2025, the waiting time could be more than 1 minute for some images. But the time was worthwhile for the increased quality of the output. The following are some sample posters with AI generated images. (The image of oranges was created in 2024, all others were created in Spring term of 2025).

Issues Encountered

One issue for the task was that GenAI tools usually have limited free usage. When the instructor asked students about what challenges or issues that they encountered with the projects, some students commented that limited free usage was an issue, but they resolved this issue by creating different accounts by different team members or switch to another tool after the free limit usage was reached. If a team needed to create more than one account to generate images, then more than one team member needed to engage in the image generation process. If teams switched GenAI tools, then they would have the opportunity to use different tools for the same task. This could be a valuable

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learning experience despite the inconvenience.

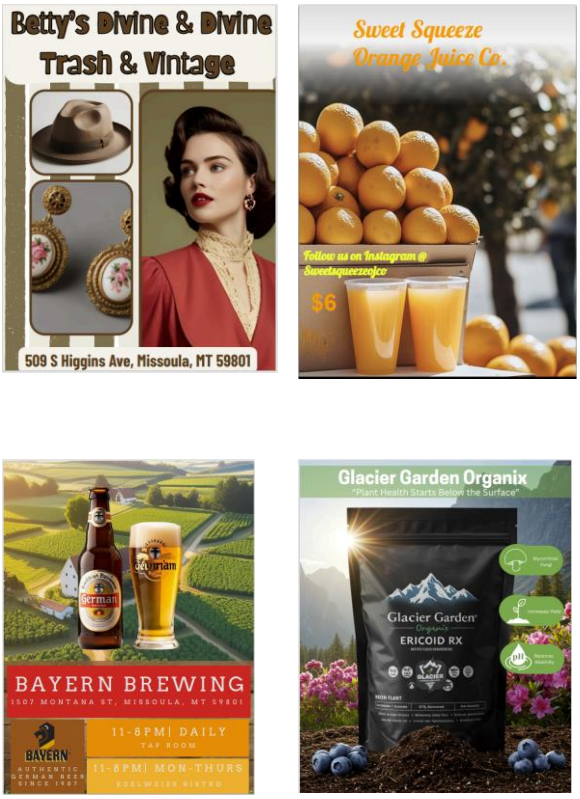

Figure 2. Sample Posters

Interactive & Iterative Co-creation Process
Based on students' documentation about their text prompts and image generation process, we could see that the image generation and poster-making process was an interactive and iterative process. Students usually had a general idea about how the product would look and input a text prompt to generate an image. Based on the generated image, they would then refine their text prompt by putting more specific instructions until the image fits their needs, such as adding additional items, text, removing elements from the image, or editing existing components such as the color scheme.

Personal taste and subjective judgment played an important role during this iterative process. Students sometimes felt that the AI generated images were too cluttered or unnatural. If so, they would request the AI tool to revise or simplify it. Students learned prompt engineering: seeing what the GenAI tool could accomplish and understanding how to direct the tool to deliver what the user designed, planned, or envisioned. Moreover, they could see how GenAI and users can collaborate and achieve something that may not be achieved by GenAI or the individual alone.

For the Spring of 2025, teams created two posters, one with AI-generated images, the other without. The human factor stood out when we compared the posters. There was no overall dominant pattern which showed that posters with AI were more visually appealing, or vice-versa. The final visual effect largely depended on the student's subjective judgment or taste. There were several situations where the same student or student group made equally good posters with or without AI-generated images, and one situation where one team member used an AI-generated image but created a natural effect, and another student used a real image and created an artificial effect.

Evaluating Posters
Forty percent of the poster mark was to include at least one AI generated image regardless of the quality of the AI image. Forty-five percent of the mark was to include other necessary components (e.g., product name or company name, price or price range of the product, location of the company or places to purchase the product). Fifteen percent of the mark was for the visual design (e.g., the product and the functions of the product are clearly specified or illustrated, and the usage of color, text font style and size are appropriate, etc.).

The effectiveness of visual design was subjective in nature; therefore, it was difficult to quantify the quality. Moreover, we wanted students to freely experiment with the tool to align the output with what they wanted to achieve; thus, we did not penalize them for "poor" visual design, which could orient students to guess about the instructors' preferences, thus dampening their motivation and restricting their creativity.

As a result, we did not deduct marks for visual design unless the readability was an issue. Instead, we made detailed comments about the effectiveness of their visual design, so that students knew how to improve their future work if the design was not visually appealing or aligned with the product functions/features. Students seemed to like this marking mechanism. Teams felt proud when their work was showcased to the class as good examples. All teams could learn from these good examples. Learning the effectiveness of visual design could only be achieved by using lots of examples.

Using AI Generated Images for Other Parts of the project.
In addition to creating images for sample

products, some teams created images for company logos, packaging boxes, and store fronts. These teams also created additional images to help illustrate the content for presentations. For example, a team planning to brew fruity beer used AI to generate images of a lemon orchard. Another team proposing to operate a burger truck used an AI-generated image to show the inside layout of the truck. Other teams used AI-generated images to illustrate meeting scenarios and milestones.

The project description does not require students to generate images for these usages; however, once students learned how to generate images, they applied them to other parts of the projects. We were glad to see that by giving students a concrete task they surprised us with their creativity. We hope this "spill over" learning effect could be carried into other courses/areas. For example, most classes in business schools would require students to make presentations with Power Point slides. Students could generate AI images for these presentations.

4. REFLECTIONS

We will continue to use these two projects for future classes. We are considering requiring students to use GenAI to generate diagrams of manufacturing and business processes for their presentations. For example, using a diagram to illustrate the beer brewing process, instead of using words to describe it, or drawing a diagram on a Power Point slide by using shapes, lines, arrows, and text boxes. In fact, the two diagrams in Figure 1 were generated using ChatGPT. It took a few rounds to get the words right, but the process was much faster than making these diagrams in Power Point slides or other tools manually.

We used GenAI primarily for image generation and poster making, the final deliverables of both projects are Power Point slides, posters, and live presentations. There is no formal report for the projects, as a result, there was little concern that students used GenAI to compose their reports. If a written report is part of the final deliverables, then the instructor would need to specify clearly whether students can use GenAI to compose the reports.

One revelation of this image generation practice was that learning GenAI can be "exploratory" in nature, not only in the sense of learning it via trial and errors, but also in the sense of loosely defined quality of the final deliverables and certain level of vagueness and uncertainty during the processes of achieving the final deliverables. For example, the effectiveness of visual design was only loosely defined with examples. We only provided limited guidance about the image generation process, and did not provide any instruction about how to make a poster.

In the traditional way of teaching and learning, instructors are usually expected to be an expert in the tasks assigned to students. For example, if an instructor needs to teach using Python or Power BI to engage data analysis and make actionable recommendations about the analysis results, she must go through the entire process by herself and know the tools very well so that she can teach the skills. With GenAI tools, it is different; we can specify what the final deliverable would look like and let students figure out the process largely by themselves. All we need to do is to design the tasks with a clear learning objective and specifics of the final deliverables and let students to experiment. Using mountain hiking as an analogy, in the traditional teaching, the entire class would hike the same trail, experience the same process, and reach the same peak. In our GenAI practice, the instructor stationed at the base camp on the mountain, informs what students should bring back from the hiking trip (e.g., photos of certain species of trees, shrubs, rocks, birds, or flowers), then allow them to choose the hiking routes (e.g., different apps/tools, and different processes, such as using one tool for image generation, and another tool for assembling and final touch). The instructor does not need to have the experience of hiking all trails (e.g., obtaining the experience of using all candidate GenAI tools). Students won't reach the same peak either, meaning their learning would be different. For example, some students used AI-generated images for other parts of the projects, it is likely that these students may start to use AI-generated images for other courses, whereas other students may not carry this learning over to other courses.

The key lesson for us was that GenAI is a new technology, and as instructors, we need to explore it with students. It is not necessary for an instructor to become a GenAI expert in order to teach students. The instructor was more familiar to Dall-E than other tools. If other instructors would like to adopt this project, they can choose any one of the GenAI tools to start. There is no need to try to learn a variety of tools before assigning the projects to students. The potential capabilities of GenAI are huge, and the number of apps/tools are increasing quickly. Students, pooled together, will likely find more apps/tools to use and more places and context in which

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GenAI tools can be used. As instructors, we can pilot some tools and usage, and let students explore. We learn from students' explorations and integrate their learning into future classes.

The instructor did not discuss the potential ethical and legal issues associated with using GenAI tools to create images/posters for potential commercial use. For future projects, the instructor will take this opportunity to introduce these concepts to the students.

5. CONCLUSIONS

Being able to use AI to solve problems and help with a variety of tasks is becoming a critical skill for future work. In this teaching case, we detailed how to embed image generation and poster creation into two projects. The grade allocation for each poster was only 2%, but almost all teams put serious effort into this task, which was reflected by their final deliverables. They used a variety of GenAI applications/tools to generate images and learned prompt engineering by evaluating and refining their prompt based on the output. The iterative process helped them to see how their own designs and ideas would affect the output, therefore gaining the understanding that AI is not an "automatic intelligence" that can replace all human work, rather an "artificial intelligence", which still needs human's guidance, direction, and input to humanize and contextualize it for the actual usage.

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Appendix A. Poster Creation Guideline and Marking Rubric

Poster Format (2% of the final grade): PDF, just one page
Poster Content

- Product name (or company name)
- At least one AI generated image
- Price or price range of the product (not required for real business, unless it is a promotion)
- Location (if it is a cafeteria, where this cafeteria is located. If it is a product, where people can buy it, you can make up a location for business plan)

A Word file that documents your team's process of creating the poster (1% of the final grade). At minimum you should include the following:

- Your team number, all members' name
- Include at least three images generated by AI, specify why you chose the one that you used in the poster (maximum image to include is 6)
- App or apps that you used to generate AI images
- Text prompt that you used to generate images
- Did you do your own poster design, or did you use online app (template or AI to generate the poster)? Yes, you can use the online template for your poster design, please cite the website.

Poster Marking Rubric

Poster (Full mark is 2)	Full Marks	Received Marks	Marking Notes
File Format (should be PDF)	0.05		
Product name (or company name)	0.2		
At least one AI generated image	0.8		
Price or price range of the product	0.35		
Location (where is the business located or where to buy the products)	0.3		
Visual design (e.g., sample product and the functions of the product are clearly specified/illustrated, and the usage of color, text font style and size are appropriate, etc.)	0.3		
Total	2		
Comments			