May 14th, 9:00 AM - May 15th, 5:00 PM

The impact of Midjourney on students' design and design process: an exploratory study

Katelijn Quartier
Hasselt University, Retail Design Lab

Citation

Quartier, K.(2025) The impact of Midjourney on students' design and design process: an exploratory study, in Quartier, K., Iannilli, V. M., Spagnoli, A., Elli, T., Prinsloo, I. (eds.), *Designing Retail & Services Futures Colloquium: Sustainable Retail and Services Futures*, 14–15 May, Milan, Italy. https://doi.org/10.21606/drsf.119

Designing Retail & Services Futures
Milan, 14th–15th May
Design Research Society DRS

The impact of Midjourney on students' design and design process: an exploratory study

Quartier Katelijn[a]

[a] Hasselt University, Retail Design Lab

*Corresponding author e-mail: katelijn.quartier@uhasselt.be

https://doi.org/10.21606/drsf.119

Abstract: We explored the impact of AI, specifically Midjourney, on the retail design process for master's students. Over three years, three student groups followed the same design exercise, with AI introduced at different phases. Group 3, which used Midjourney during concept development, showed increased creativity, stronger storytelling, and more cohesive designs. However, AI had no significant impact on innovativeness or originality. Midjourney did accelerate ideation, allowing students to generate concept boards quickly, reducing early-stage development by 1-2 weeks. Despite this, its use declined in later design phases, as students found it unable to fully align with their visions. The study concludes that Midjourney is most effective in the concept phase, offering fast visualization, lowering technical barriers, and inspiring creative thinking. While it may not replace traditional design methods, it serves as a valuable creative tool for exploring and refining ideas.

Keywords: AI; design process; creativity; retail design

1. Introduction

As researchers and teachers in the Faculty of Architecture and Arts, we have been working for several years to develop tools that facilitate the design process of stores for students. Several tools and models have already been published (Quartier, 2023). Influenced by recent developments in AI, we set up an experiment to explore the possible impact of an AI-tool on the design process. In scientific literature we found sound proof that AI could benefit the design process. Text-to-image AI tools like Midjourney are particularly suited for retail design by accelerating spatial planning, enhancing brand identity, and improving consumer experience. They enable rapid exploration of store layouts, help maintain visual consistency with brand aesthetics and assist in crafting immersive shopping environments. While primarily used for visual inspiration, their ability to generate diverse design concepts makes them valuable for the fast-paced retail industry. In recent years

there has been a lot of focus on appropriately integrating generative AI models into the design process. For example, we see a lot of publications around supporting the concept phase, using language or image generation to explore a broad spectrum of conceptual possibilities. The literature review by Rane et al. (2023) shows that tools like ChatGPT or Bard can play an important role in this, as they can quickly generate different alternatives, taking into account style preferences, color palettes and spatial requirements. A similar conclusion can be drawn based on the user study by Paananen et al. (2023), in which architecture students were asked to use popular models (Midjourney 4, DALL-E 2, Stable Diffusion 1.5) to generate an impression image of a floor plan, an interior and a material. Students particularly appreciated that the models took into account certain conditions (e.g., number of floors or overall size). After the concept phase, several publications explore how initial impressions can be further solidified.

For example, RoomDreaming is a prototype by Wang et al. (2024) that uses image generation to iterate quickly and efficiently over a wide range of suggestions, with the user directing the process by selecting the preference each time. As a result, suggestions in subsequent iterations quickly converge to the user's specific needs. Designers reported after a user study that a first hour of collaborative design via RoomDreaming gave similar results to several days of traditional meetings. Another example is the platform by Thakkar et al. (2024), where users first enter the dimensions of a virtual (3D) space and place objects. Then an interior image is generated that matches the space to a certain extent (in terms of layout, specific furniture, proportions ...). This shows that even with image generation, the algorithm can be somewhat controlled, by enforcing a certain spatial structure. Moreover, the platform also allows objects to be moved or removed. Research also shows how AI can assist designers in later steps of the process. For example, Hou et al. (2024) investigated how color palettes can be automatically determined via a language model supported by domain-specific knowledge, allowing the intent of the designer's textual input to be better ascertained. The colors suggested by the model can then be automatically assigned to parts of the interior (furniture, walls, etc.) and refined by the designer. Generative models such as ChatGPT and DALL-E can also be used for assigning textures and colors in a 3D scene. For example, the prototype of Gallega et al. (2024) uses these models to recommend relevant textures, generate multiple texture maps of the same type of texture, or suggest color palettes. In turn, Merell et al. (2011) developed an interactive system that proposes furniture arrangements that consider interior design guidelines (such as balance, focal points, alignment, and circulation). An informal study found that users with no prior knowledge in terms of interior design knew better arrangements when using the system.

Next, we did an online exploration to look for the tools at hand. There seems to be a breakthrough in generative AI technologies that can support and accelerate creative processes. An important evolution in the landscape of AI and creative design is the breakthrough in generative algorithms. Given the impressive advancements in recent years, this technology is well-suited for translating abstract DNA values—typical terms brands use to define themselves—into immersive visual and sensory shopping experiences. Especially interesting are image models that can convert textual input into an image based

on their extensive training. Tools such as Midjourney, Stable Diffusion, Shutterstock AI Image Generator, DALL-E, Adobe Firefly, ... are available to a wide audience, whether for a fee or not. Such tools already offer many advanced features, such as the ability to manually select and delete specific parts of an image or replace them with an alternative. There are, however, commercial generative AI tools that specialize in interior design. Some interesting players in this field are Spacely AI, AI Room Planner and RoomGPT, which promise users through their AI-based visualization to speed up and streamline the design process, while being cost-effective. They offer users a choice of interior styles, but their customization options remain very limited. These tools often require an initial image or sketch of the existing/desired room, in an attempt to meet the user's needs, but they primarily focus on generating visually appealing images of interiors similar to the user's input. Midjourney is a bit different as it allows users to generate designs by simply describing what they want in words.

After this exploration, we chose the Midjourney programme. Midjourney promises, as an AI-powered image-generation platform, offers students an opportunity to explore and visualize concepts in ways that were previously time-intensive or technically challenging. Also, Midjourney seemed to be easily accessible, offering endless conceptual images of spatial images without giving it a lot of input. So, both for conceptual thinking as store design Midjourney seemed the best fit.

2. Experimental set-up

The study was conducted among Master students of interior architecture majoring in retail design in the academic year 2022-2023, 2023-2024 and 2024-2025, with 2022_2023 as the control group, using no AI. With the retail design process model of Servais et. al (2012) in mind, and what we found in the literature review, two phases in the design process were selected to introduce Midjourney to the students: concept design phase, and the store development phase.

During the first year of the three (2022-2023), no Midjourney was taught nor mentioned to the 6 students following the master (group 1). After a short survey at the end of the exercise, students were found to be unfamiliar with Midjourney or any other AI design tool. During the second year (group 2), Midjourney was taught to 11 students following the master, in the store development phase with the premise that it would inspire the students to elaborate their design. The third year of study, we taught students Midjourney at the beginning of the design process, during the concept development phase (group 3). This year, there were 6 students involved. The Midjourney training consisted of a half-day session, beginning with a brief introduction to the platform. Following this, students were assigned two hands-on exercises to assess their ability to work effectively with the program. The retail design exercise remained consistent over three years: students were tasked with designing a concept store for an internationally recognized luxury brand or designer within a 400 m² space provided to them. They had the freedom to choose their brand, with selections including Louis Vuitton, Dolce & Gabbana, Dries Van Noten, Walter Van Beirendonck, and Rolex. A key focus of the exercise was crafting an immersive shop-

ping experience. Master's students were already familiar with retail design, having completed a semester-long retail design project in their third year of the bachelor's program. During that phase, they followed a structured design process with strict timelines, guided by tutors. In the master's program, however, they had greater autonomy in managing their own schedules. This flexibility allowed us to evaluate whether Midjourney influenced the timing of their design process.

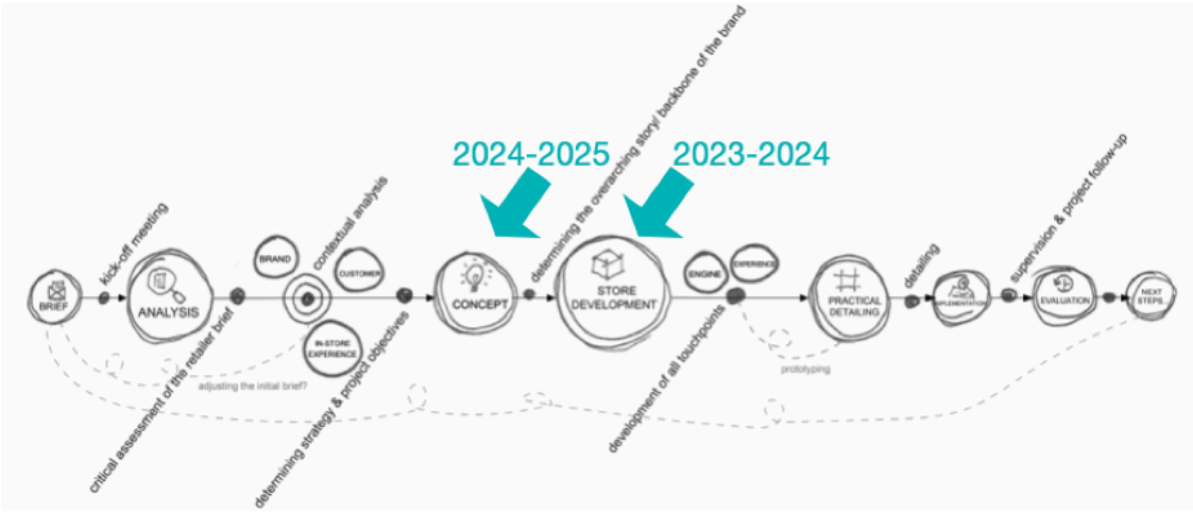

Figure 1 Retail design process with the use of Midjourney indicated in the process

3. Analysis

Over the course of three years, two teachers—a retail design expert and the author—consistently guided the design process. They maintained a stable approach, making no changes to the design exercise or their methods of instructing and mentoring students. This ensured that any variations in student outcomes were not due to differences in guidance but rather to the influencing of the AI-tool used in the process.

The design process was closely monitored in terms of both timing and visual output, using structured documentation (workflow document) and student presentations. To assess the effectiveness and impact of the process, the results were analyzed based on three predetermined criteria:

- Innovativeness – The extent to which the design introduces new and forward-thinking solutions.
- Originality – How unique and distinctive the design is compared to existing solutions in the market.
- Creativity – The depth and meaningfulness of the ideas generated throughout the design process.

By systematically evaluating these aspects, the study aimed to identify the influence of different approaches on the quality and nature of student designs.

4. Results

4.1 Use of Midjourney

Although the students in Group 2 only learned to use Midjourney during the store development phase, many still referred to their concept boards from the concept design phase. Most of them recreated their concept boards using Midjourney (see Figure 2), though these new images were largely copies of their original work, with little further experimentation. During the store development phase, students used Midjourney primarily for inspiration but did not allow it to influence or guide their design decisions. Analyzing their workflow documents at the end of the process revealed that the frequency of Midjourney-generated images remained relatively low.

In contrast, Group 3, which was introduced to Midjourney during the concept design phase, used it extensively to experiment and develop their concept boards. These boards were notably more spatial and interior-focused than those of Group 2 (see Figure 3). Students in this group continuously generated images until they arrived at their ideal concept—an efficient process completed within half a day. However, like Group 2, they rarely used Midjourney in the later design stages, neither for inspiration nor for visualizing their ideas.

During a final review, students in both groups expressed that Midjourney did not always produce the results they envisioned. Many already had a clear mental image of their designs that the AI struggled to replicate. A key difference, however, was that Group 3 tended to keep their Midjourney-generated concept images as a guiding reference throughout the design process, whereas in Group 2, the concept board played a minimal role in further development.

Figure 2 Concept boards of Group 2, Walter van Beirendonck and Nicky Vankets

4.2 Impact on final design

An analysis of the students' results revealed no significant impact on two of the three predetermined evaluation criteria: innovativeness and originality. In other words, the extent to which the designs introduced new solutions, and their uniqueness compared to existing designs remained relatively consistent across all groups. However, there was a noticeable increase in the creativity factor, particularly in Group 3.

In this group, the use of Midjourney appeared to enhance the depth and strength of the conceptual storytelling. The narratives behind the concepts were more compelling, and the overall design concepts were more clearly defined and cohesive. Additionally, the translation of ideas into visual design was more consistent, as illustrated in Figure 3. This suggests that AI-generated inspiration may have helped students refine their ideas more effectively, leading to stronger and more coherent design outcomes.

Figure 3 Student work for Vivienne Westwood, group 3: left-hand side is Midjourney concept board, right hand side is final design

4.2 Impact on design process

The teachers noted that the timeline of the design process varied between groups. In Group 1 (the control group), the initial research and analysis phase lasted seven weeks. During this time, students examined the brand and target audience, culminating in the creation of two personas, a brand analysis using the brand pyramid (author, 2023), and a concept board with accompanying text. This was followed by another seven weeks dedicated to the actual design work.

Group 2 followed the same timeline for both research and design, showing no change in process duration. However, in Group 3, the use of Midjourney accelerated the early stages of concept development. The AI tool provided immediate visual inspiration, allowing students to generate ideas more quickly. As a result, the analysis and concept development phases took less time, reducing the need for the additional one to two weeks that were typically required to create a concept board manually. This suggests that AI-

driven tools can streamline the ideation process by offering rapid visual references, potentially allowing for more time to refine and develop designs.

5. Conclusion and discussion

When designing the exercise, we assumed that Midjourney would serve as a valuable design companion, providing students with limitless inspiration, particularly during the store development phase. However, our research shows that students are more likely to use Midjourney in the concept phase. Somewhat unexpectedly, the program was little used in the later design phase. We can conclude that:

1. Accelerating Ideation and Visualization in concept design phase: Midjourney allows students to quickly generate visuals based on textual prompts, which accelerates the brainstorming and ideation phase. This capability enables them to test multiple creative directions in a fraction of the time it would take using traditional methods. For design students, this means they can explore a broader range of ideas, iterate faster, and refine concepts more effectively.

2. Lowering Technical Barriers: for students who may lack advanced skills in complex design software, Midjourney provides an accessible way to create professional-grade visuals and boards. This empowers students from diverse backgrounds to engage in creative exploration without being limited by their technical expertise.

3. Inspiring Creative Thinking: by generating unexpected or unconventional results, Midjourney often pushes students to think outside the box. The AI's interpretations can serve as inspiration, challenging students to reconsider their assumptions or explore new creative directions.

So, Midjourney could become a powerful companion in the design process for students, offering inspiration, some level of efficiency (producing a lot of images in a short timeframe) and accessibility. We noticed that it is especially useful in the concept generation phase.

6. Limitations

While our study provides valuable insights into the role of AI in the design process, the small sample size (6-11 students per year) presents certain limitations, particularly regarding broader applicability. Beyond sample size, several potential biases could influence our findings: group dynamics and cognitive bias in Perception of AI Assistance. Regarding group dynamics, although students worked individual on their project individual differences, dominant personalities, and peer influence can affect student performance, making it harder to isolate the study's impact. In term of cognitive bias, students' preconceived notions about AI—whether overly optimistic or skeptical—could affect how they engage with the tool. If participants expected AI to be highly creative, they might have relied on it more, whereas skeptics may have underutilized its potential. A more structured approach, such as comparing AI-assisted and non-AI-assisted design processes, could help isolate these effects.

By addressing these biases in future research, we can gain a more nuanced understanding of AI's role in design education and ensure that findings are more broadly applicable.

Overall, a quantitative component, such as larger-scale data collection or statistical analysis, would strengthen the findings by providing more objective insights.

References

Gallega, R. W., & Sumi, Y. (2024). Exploring the use of generative AI for material texturing in 3D interior design spaces. *Frontiers in Computer Science*, 6.

Hou, Y., Yang, M., Cui, H., Wang, L., Xu, J., & Zeng, W. (2024). C2Ideas: Supporting Creative Interior Color Design Ideation with a Large Language Model. *Proceedings of the 2024 CHI Conference on Human Factors in Computing Systems* (CHI '24). ACM.

Merrell, P., Schkufza, E., Li, Z., Agrawala, M., & Koltun, V. (2011). Interactive furniture layout using interior design guidelines. *ACM SIGGRAPH 2011 Papers* (SIGGRAPH '11). ACM.

Paananen, V., Oppenlaender, J., & Visuri, A. (2023). Using Text-to-Image Generation for Architectural Design Ideation. *ArXiv*.

Quartier, K. 2023. *The big book of retail design*. Leuven: Lannoo Campus.

Rane, N., Choudhary, S. & Rane, J. (2023). Integrating ChatGPT, Bard, and leading-edge generative artificial intelligence in architectural design and engineering: applications, framework, and challenges. *SSRN Electronic Journal*.

Servais, E., Quartier, K. and Vanrie, J. (2021), "Designing Valuable Experiential Retail Environments: A Review of the Design Process", Quartier, K., Petermans, A., Melewar, T.C. and Dennis, C. (Ed.) The *Value of Design in Retail and Branding*, Emerald Publishing Limited, Leeds, pp. 159-170. https://doi.org/10.1108/978-1-80071-579-020211013

Thakkar, K., Vadgama, K., Ranawat, K., Sharma, R., & Mangla, M. (2024). Generative AI based Interior Designing. *International Conference on Electrical Electronics and Computing Technologies* (ICEECT), 1.

Wang, S., Su, W., Chen, S., Tsai, C., Misztal, M., Cheng, K.M., Lin, A., Chen, Y., & Chen, M. (2024). RoomDreaming: Generative-AI Approach to Facilitating Iterative, Preliminary Interior Design Exploration. *Proceedings of the 2024 CHI Conference on Human Factors in Computing Systems* (CHI '24). ACM.

About the Author

Katelijn Quartier is Professor in retail design and the academic director of the Retail Design Lab knowledge centre at Hasselt University. She has published in high standard academic journals land she is the author of The Big Book of Retail Design.