SUTD Leap

[RE]IMAGINE EDUCATION

A weekly Design.AI newsletter

USING AI IN STUDIO-BASED LEARNING

Ray Patrick Sationo, Student, ASD
In Conversation with Dr. Nachamma Sockalingam, OSP and Juan David Salazar Rodriguez, Ph D Student, ASD

Ray Patrick Sationo
Term 4 Student

In this issue, we ask: *Can AI improve how students think without taking over what they create in studio-based learing?*

Ray, a Term 4 student in Architecture and Sustainable Design, uses ChatGPT and Gemini to reflect, sanity-check concepts, and prepare for critique. But can a language model really grasp spatial intention and logic or is it just mirroring the words we feed it?

Across design education, research shows the value of AI in reflection- rather than invention. So how can we use AI on reflecting? How can we move from overreliance on AI to strategic use of AI? Ray's approach points to a balanced path forward. He treats AI as a thinking partner—useful for reflection, not direction.

For educators, this highlights a broader opportunity: to design learning environments where AI supports clarity without replacing the teacher nor shortcutting the process, and where students learn to question both their designs and the tools they use.

Can AI make space for deeper thinking and promote self-regulated learning?

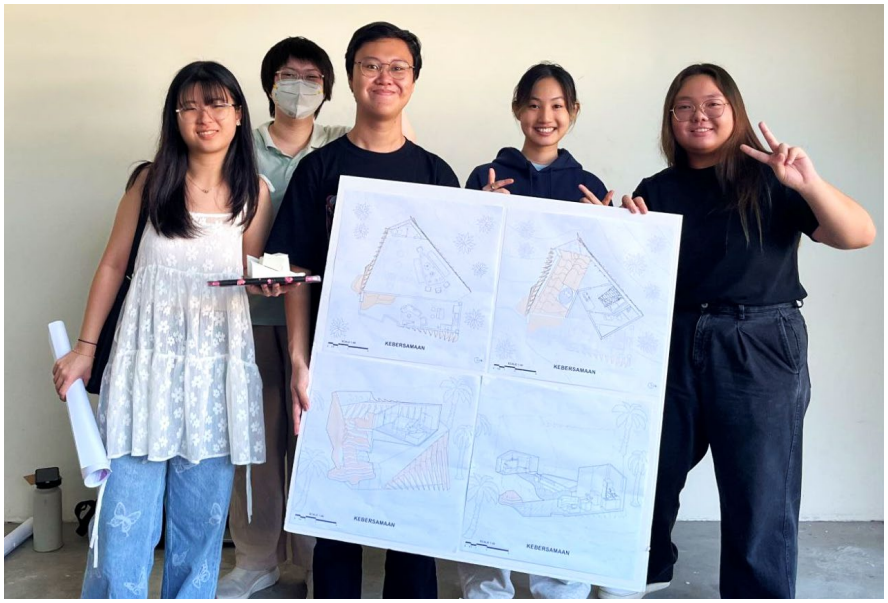
Editor of Newsletter:
Dr. Nachamma Sockalingam, Office of Strategic Planning

Hi! Can you introduce yourself and tell us about your course work at SUTD.

Hi, I am Ray and I am starting my fourth term at SUTD, which also marks the beginning of my architectural studies.

My pre-university days were very STEM-focused, and I come from a high school in Jakarta, Indonesia. So I did not have much exposure to design studios, architectural thinking, or creative studio-based learning.

I've really enjoyed studying at SUTD, where we explore new ways of learning—especially working in teams, using design thinking, and experimenting with AI in our coursework.



Me and my classmates after our final Spatial Design World presentation at SUTD

One highlight of SUTD experience is an elective I took in my first year called *Spatial Design World.* It bridged traditional design principles with emerging technologies. We focused on moving between physical space and digital representation through hands-on, technical workflows. The module ran in a studio format and involved site study, concept development, spatial organisation, and small-scale design work—both individually and in teams.

Me and my high school classmates

As a result, the design studio environment has been a new learning experience for me. I am gradually learning how to think creatively, develop concepts, and engage in critiques, which has been an important shift from my more technical and structured STEM background. It's been a challenging but rewarding transition—and I'm looking forward to deepening those experiences in future terms.

What do you enjoy most about studying architecture at SUTD?

Undergraduate studies at SUTD follow a unique structure where all students go through a common first year before entering their specific pillar, including Architecture and Sustainable Design (ASD). This allows students to build a shared foundation in design thinking and interdisciplinary learning before continuing into their pillar.

The ASD curriculum places strong emphasis on design studios. In the pillar years, there are no written exams, and assessment is mostly based on projects, presentations, and critiques. There is also a strong hands-on approach, with students encouraged to explore digital tools and technologies as part of the design process.

What I really like about architectural study at SUTD is the focus on learning through the design process and critique, instead of only the final outcome. From my experience in the Spatial Design World module, the studio format pushed me to explain my ideas clearly and reflect on the feedback given by the professors. Coming from a STEM background, this way of learning was new to me but helped me develop a different way of thinking, which I look forward to building on in architecture.

Have you used any Large Language Models (e.g., ChatGPT) in your design studies?

Yes, I've used ChatGPT and Gemini in my design studies, especially to help with critiques.

In design studio, critiques are a regular part of the learning process. They usually happen face-to-face in small groups or as one-on-one discussions with professors, where students present their work and receive feedback from peers and instructors. Outside of studio, we also have more casual critiques with classmates online, like sharing progress and giving quick feedback over Telegram.

Alongside these critiques, I use LLMs as an extra way to organise my thoughts and reflect on my work. I usually explain my overall concept and key design decisions, then ask for feedback on the strengths and weaknesses of the project. This helps me check whether my ideas are well-justified, and spot areas that could be improved or clarified further.

For example, one assignment involved a spatial transformation where we had to reimagine our own room as a different, interesting space. I chose to transform my room into a first-class aircraft cabin because of my interest in aviation.

In the early stages, I used an LLM to "sanity-check" my concept—to see if ideas like privacy, luxury, and spatial sequencing came across clearly in a small space. After that, I used it mainly for reflection—asking whether the transformation logic was clear, and which parts felt weak.

All the design work was done entirely by me, with the LLM acting as an extra source of critique and feedback alongside my peers and instructors.

Between the tools, I use ChatGPT more when I want clearer, more structured written feedback that helps me reflect step by step. I tend to use Gemini when I want broader feedback or a different take on the same idea. A lot of times they give similar responses, so I don't necessarily see one as better than the other.

I'm turning an isometric drawing of my bedroom into a first-class aircraft cabin for a uni project. The key ideas are privacy, luxury, and clear spatial sequencing in a small room. Does the concept feel coherent enough?

Yes — as a **concept**, it's coherent and actually quite strong for a uni project. You're translating a *domestic, intimate space* into a *highly optimized, premium transport interior*, and the overlap between those two worlds supports your key ideas rather than fighting them.

Here's why it works, and where you can sharpen it so reviewers immediately "get it":

Why the concept is coherent

1. Bedroom → First-class cabin is a logical analogy

Both spaces:

- Are **small but highly controlled**
- Prioritize **privacy, comfort, and personal territory**
- Use **layering rather than openness** to create luxury
- Depend on **carefully sequenced activities** (arrival → settling → rest → sleep)

This is a screenshot from Rhino of my transformed room so far. Based on the pic, does the first class aircraft cabin idea feel convincing? Are there elements that don't fully support the overall experience? Also analyse the strengths and weaknesses.

Based on the image, the **first-class aircraft cabin idea does come through**, especially at the level of furniture layout and object choices. The built-in seating, side console, screen placement, and the way everything is tightly integrated into the perimeter feel very cabin-l ↓ The arrangement suggests a premium, self-

Examples of LLM prompts I use during the design process

A bit too rectilinear overall

The consistent use of straight edges and right angles makes the space feel more like a high-end architectural interior than an aircraft cabin. First-class suites typically balance rational geometry with selective curvature.

Sharp 90-Degree Corners: Look at the desk and the shelving. In aircraft design, corners are almost always **filleted (rounded)**. This is for safety during turbulence and to maximize the strength-to-weight ratio of the panels.

Example of ChatGPT (top) and Gemini (bottom) giving similar feedback

You mentioned you use LLMs for critiques. How does feedback from an LLM compare with feedback from peers or professors?

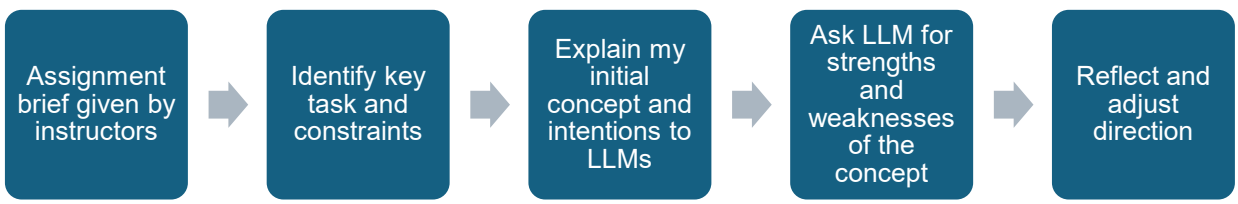
I find LLM feedback to be more neutral and consistent, while feedback from peers and professors gives a wider range of perspectives that often evolve as the project develops.

LLMs are helpful for checking clarity, logic, and whether my ideas come across as intended but their feedback can feel quite general. That's why I mainly use it as a starting point for reflection, not as a final direction. I still rely more on peer and professor feedback for deeper discussion and guidance.

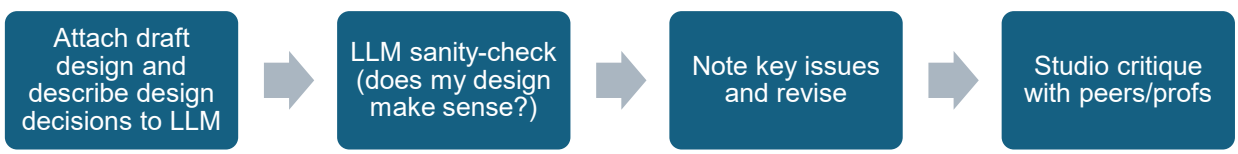
Overall, I use LLMs at specific moments in the design process, mainly to help me interpret design briefs, reflect on my work, or organise feedback. I don't use them to generate design ideas or make decisions.

I also think LLMs can influence how students interact during critiques. On one hand, they help students feel more prepared and confident when explaining their designs. On the other, relying too much on AI feedback might make critique discussions less in-depth. For me, LLMs work best as a support tool—before or after critiques—not a replacement for them. How I typically use LLMs for critique:

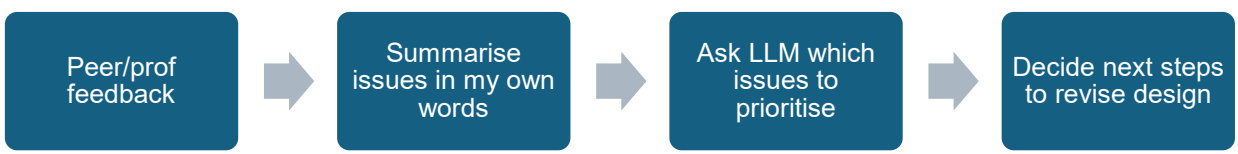
Flow 1: Understanding the brief & early reflection



Flow 2: Before studio critique (self-check)



Flow 3: After receiving feedback from peers or professors (prioritising revisions)



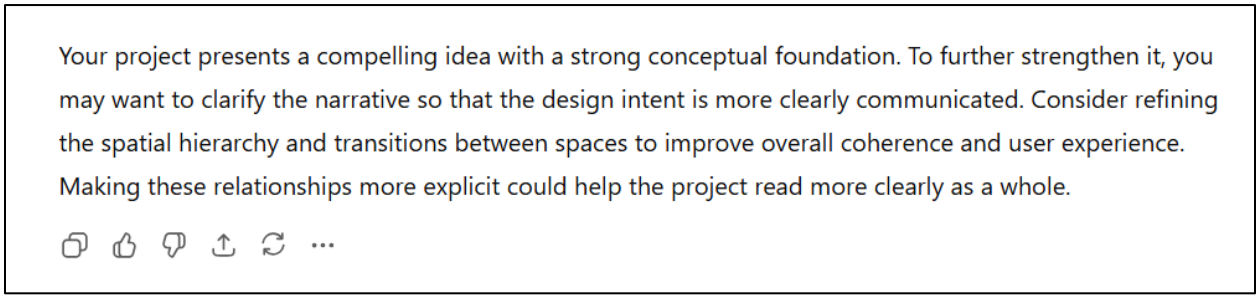
What challenges or concerns have you experienced when using LLM?

One challenge I have experienced is that LLM feedback can sometimes be too general and may not fully capture the specific context of a design project. Because of this, I am careful not to rely on it too heavily and always balance it with my own judgement and studio feedback.

In another project, I used an LLM to reflect on my concept development. The feedback mentioned ideas such as “clarify the narrative” and “refining the spatial hierarchy”, But it did not give concrete examples or suggestions how to actually do that. Turning those comments into actual design changes required my own interpretation and follow-up discussions with my peers and professors during studio sessions.

When I shared the same work with a classmate, she pointed out that the transition between two spaces felt abrupt and suggested that I adjust the width and alignment of the passage to make movement feel more gradual. This kind of targeted feedback made it much easier to turn abstract suggestions from LLMs into actual design decisions.

Another thing I am mindful of is how LLMs fit into group work. In group work, I try to use these tools thoughtfully and transparently so that they support the process without disrupting the dynamics of the group. I see LLMs as a helpful support tool, but one that works best when combined with human feedback and my own thinking rather than replacing them.



Example of LLM feedback that required further interpretation through discussions in studio

What do you think LLMs do particularly well in supporting your learning for the Design Studio?

LLMs are helpful for giving general, objective feedback and allowing me to step back and reflect on my work. They help me check if my ideas are clearly and logically communicated, especially when I have been working closely with the project and might overlook gaps.

They are also useful for breaking down complex feedback from peers and professors. After critiques, I often receive many comments at once. LLMs help summarise and organise those points, which saves time and makes it easier to prioritise revisions. Overall, LLMs support my learning by making reflection more efficient. They help me process feedback faster and focus my effort where it matters most.

Any final thoughts on the future of Architectural Studio—what do you see as the role of AI in this?

I see AI becoming more of a support partner in the architectural studio, rather than something that replaces how studio works.

Tools like LLMs can assist with reflection, organising feedback, and preparing for critiques, while technologies like XR could enhance how we visualise space, scale, and user experience. This can help students understand their designs earlier and communicate ideas more clearly.

At the same time, I don't think AI should replace the creative or artistic side of architecture. Human creativity and judgement are at the core of design, and AI should support and not take over that process.

Ideally, studio remains a space for making, experimenting, and exchanging ideas. If used thoughtfully, AI can enhance how students learn and reflect, without taking away from the human and artistic aspects that make design studio meaningful.

"AI helps me think more clearly, but it's still people who help me design better."

Can AI help learners become more aware, autonomous, and strategic in how they learn? In studio-based settings, where ambiguity and iteration are key, students are starting to use AI not to generate ideas, but to reflect, assess, and self-correct. This hints at a bigger shift: from AI as content generator to AI as a thinking scaffold. Research on self-regulated learning highlights the importance of goal-setting, monitoring, and reflection—skills AI can subtly support. What would it mean to design education where learners, not AI, stay in control—yet use it to learn how to learn?