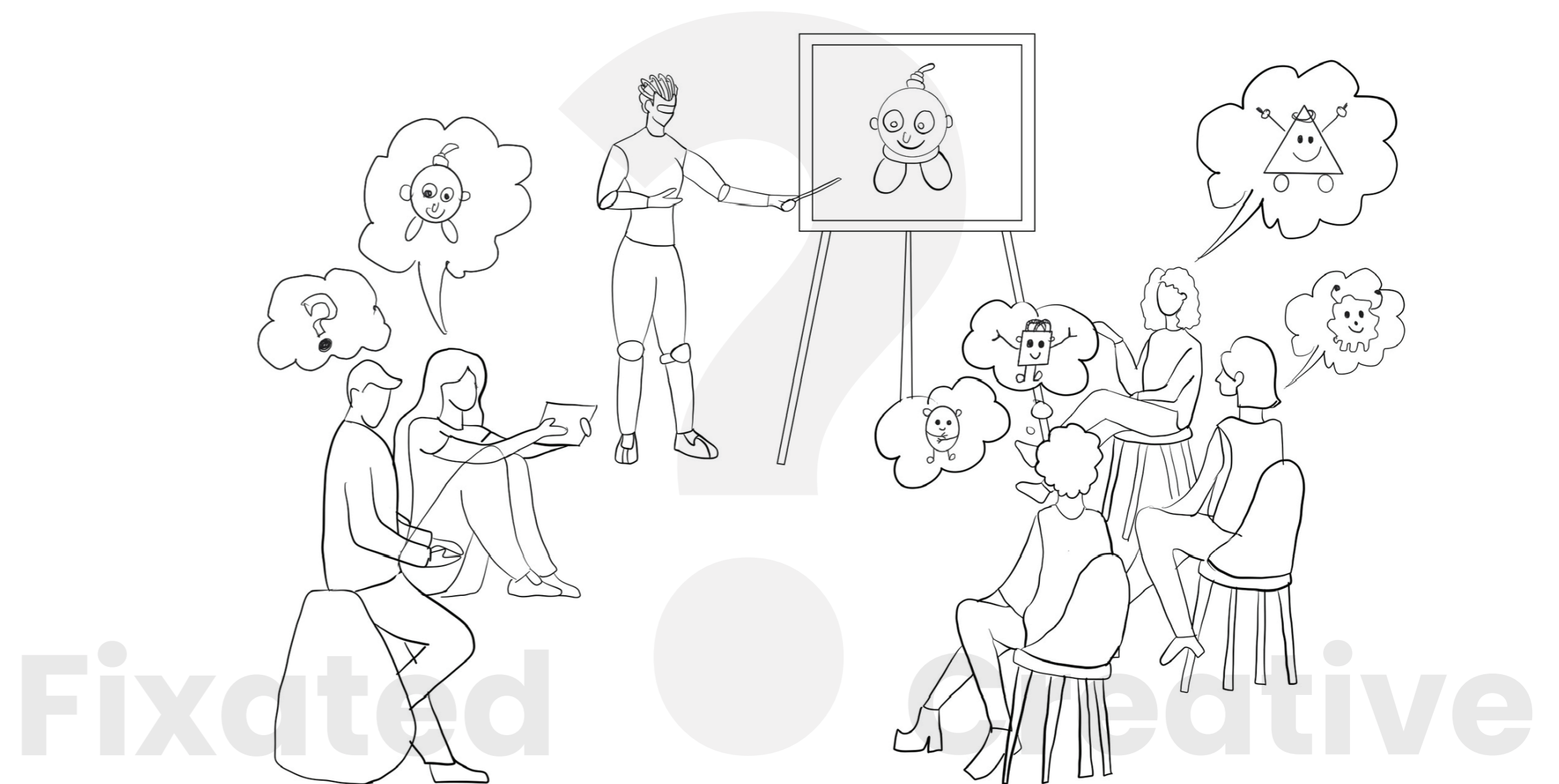


Can AI-generated Images Break Design Fixation ?

creativity creativity support tools

AI-generated images

design fixation design education



What is design fixation?

Design Fixation is the “blind adherence to a set of ideas or concepts limiting the output of conceptual design” [2]. Studies have shown that fixation is more likely to occur when designers are exposed to example solutions to design challenges [2].

Could AI be a solution?

In recent years Generative Artificial Intelligence (AI)-mediated CSTs have become popular. Generative AI-CSTs are AI/Machine algorithm-based CSTs that either produce output or assist designers in executing their design decisions [3]. Designers are trying to incorporate these applications to better facilitate their creative process [4-6]. However, given that design fixation is more likely to occur when exposed to examples, it is unclear whether these generative AI images can be a catalyst or a hindrance for creative output when used as a source of inspiration.



Our Approach

In this research, we aim to explore **how AI-generated images** can act as a Creativity support tool (CST) that could enable design students to **mitigate design fixation**. We will investigate **how AI-generated graphics might enhance the experience of creative insight of designers** and the originality of their creative output vs the provided inspiration. To achieve this, we will take a **mixed-method approach** and **build upon established** techniques in **design fixation research** by Jansson and Smith [2].

Method and Measures

 Design Challenge

 condition 01  condition 02  condition 03

 Fixated  Creative

Measured by

 Questionnaires  Expert rating  Interviews

Design and Engineering students with a visual design background will be recruited for this experiment.

These subjects will be divided into three (3) groups. These groups will be exposed to Three (3) different conditions while performing a One (1) hour design challenge.

To see how fixated they are, we will score their outputs against a set of fixated features, and further utilizing the consensual assessment technique for creativity [1] we will assess the creativity of the designs created. Moreover, we will conduct a follow-up interview to capture a qualitative understanding of the performed task.

Reference:

- Amabile, T.M. 1982. Social psychology of creativity: A consensual assessment technique. *Journal of Personality and Social Psychology*. 43, (1982), 997–1013. DOI:<https://doi.org/10.1037/0022-3514.43.5.997>.
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- [3] Joon, J. et al. 2021. The Intersection of Users, Roles, Interactions, and Technologies in Creativity Support Tools; The Intersection of Users, Roles, Interactions, and Technologies in Creativity Support Tools. *Designing Interactive Systems Conference 2021*. (2021), 17. DOI:<https://doi.org/10.1145/3461778>.
- [4] Lamiroy, B. and Potier, E. 2022. Lamuse: Leveraging Artificial Intelligence for Sparking Inspiration. *Lecture Notes in Computer Science (including subseries Lecture Notes in Artificial Intelligence and Lecture Notes in Bioinformatics)*. 13221 LNCS, (2022), 148–161. DOI:https://doi.org/10.1007/978-3-031-03789-4_10/FIGURES/6.
- [5] Sbai, O. et al. 2018. DesIGN: Design Inspiration from Generative Networks.
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Predicted outcomes

We envision that this study will provide insights into ways to integrate AI-generated graphics in design studio activities to enhance the creativity of design students while informing ways to design CSTs with AI mediation of creativity.



Can AI-generated Images break Design Fixation ?

- creativity
- creativity support tools
- AI-generated images
- design fixation
- design education

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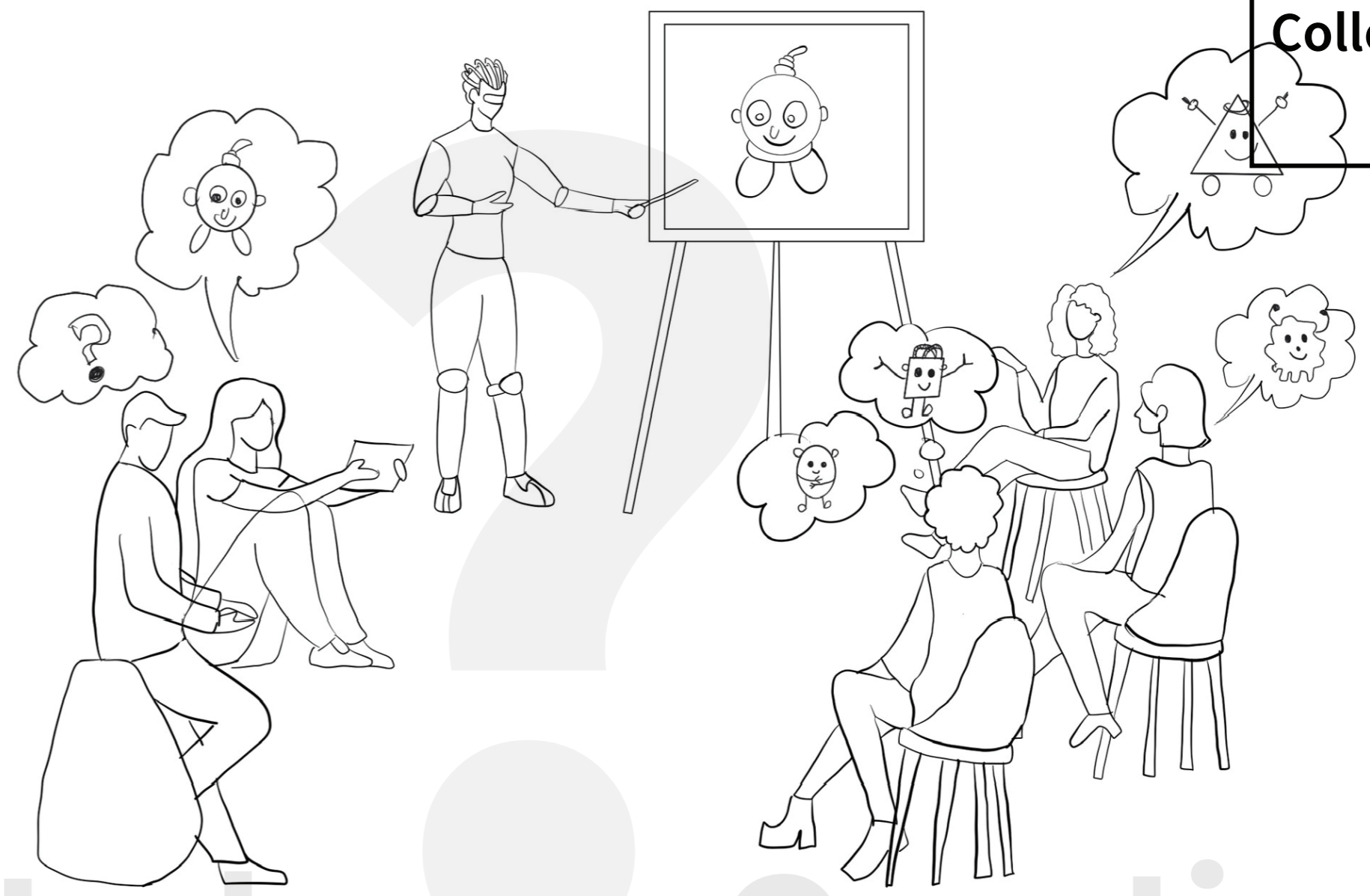
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Fixated Creative

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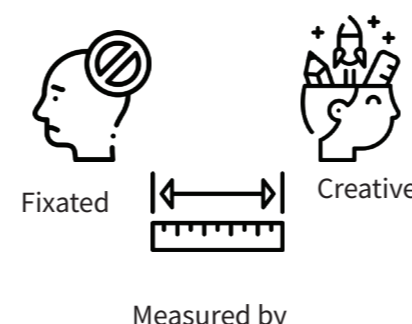
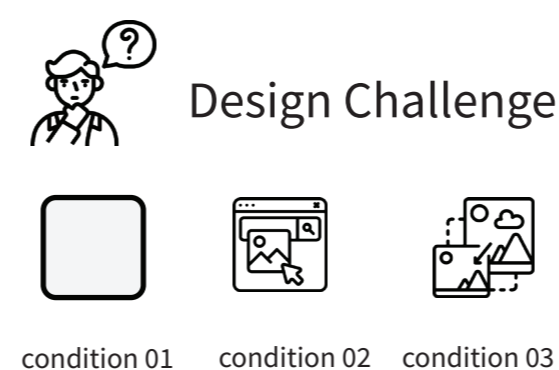
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Method and Measures



We will recruit Design and Engineering students with a visual design background for this experiment.

These subjects will be randomly divided into three (3) groups. These groups will be exposed to Three (3) different conditions

Condition I : without any aid for inspiration.
Condition II: Google images as a source of inspiration
Condition III: AI generated images as a source of inspiration

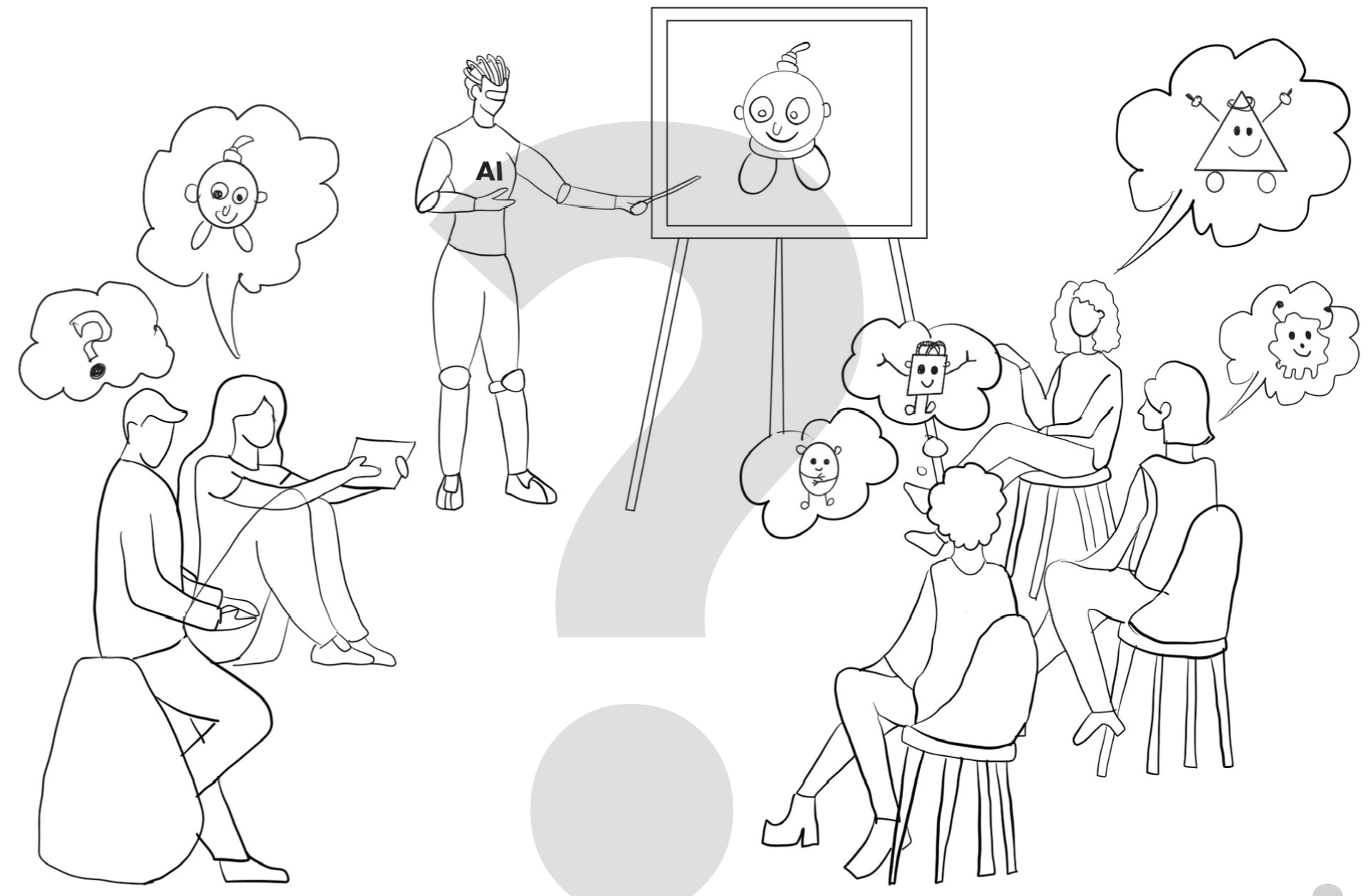
while performing a One (1) hour design challenge.

To see how fixated they are, we will score their outputs against a set of fixated features, and further utilizing the consensual assessment technique for creativity [1] we will assess the creativity of the designs created. This task will be followed up by an interview to capture a qualitative understanding of the performed task.

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We envision that this study will provide insights into ways to integrate AI-generated graphics in design studio activities to enhance the creativity of design students while informing ways to design CSTs with AI mediation of creativity.

Can AI-generated images break design fixation?



Fixated

Creative

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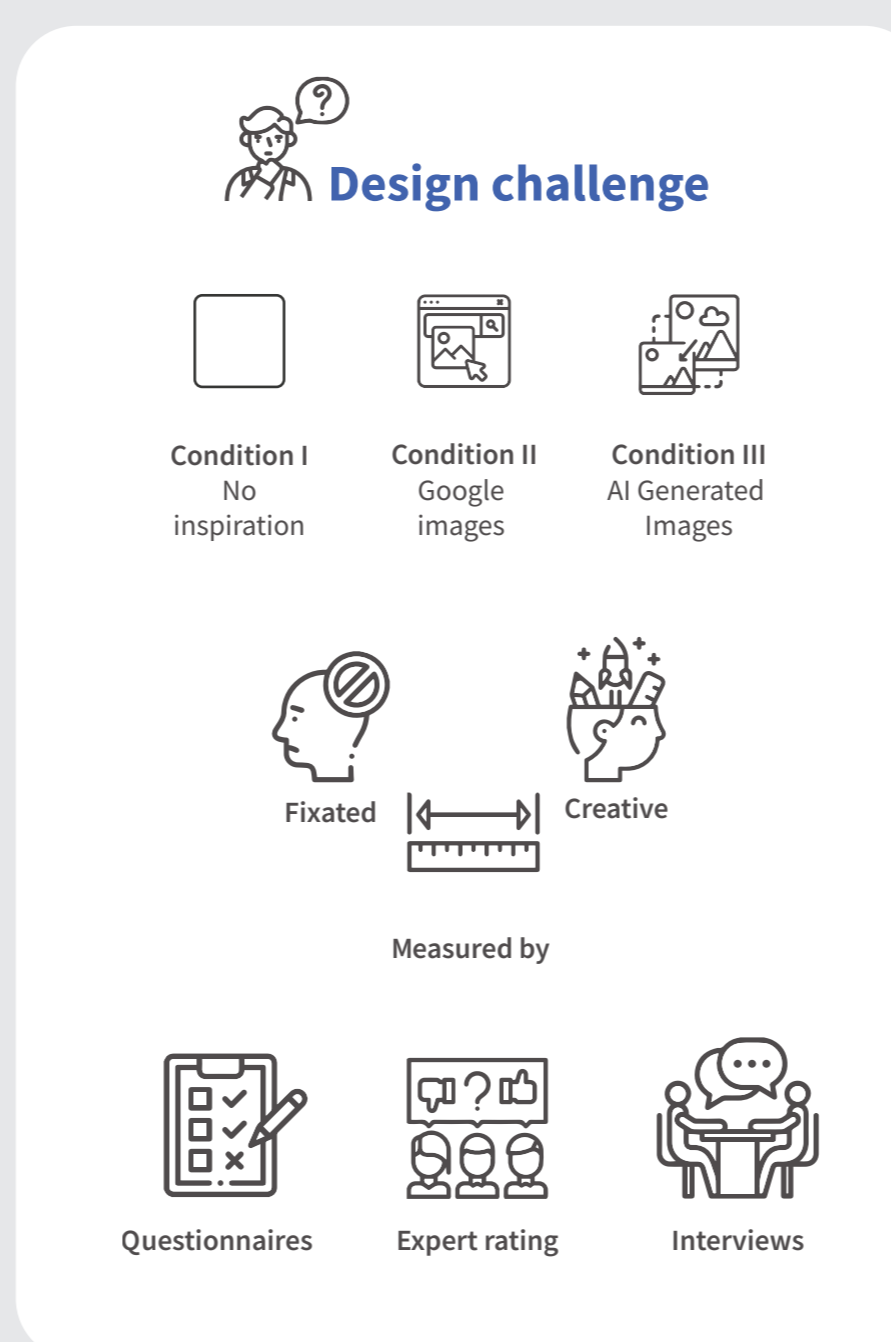
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Method and measures



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