

Magic and Design Thinking

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Design Thinking in Education

Game-based Learning

Magic as Pedagogy

Magic, as a performing art, aims to create a sense of wonder and a magical experience for the audience. The way magicians design and create such experiences aligns closely with design processes in other fields. This paper introduces magic as a pedagogical method for facilitating design thinking. The proposed activities were presented in a workshop at AECT 2025. Through this workshop, attendees learned about the foundation of magic performance and how various aspects of magic (watching, learning, and performing magic) can actively engage students in learning various stages of the design-thinking process and related concepts. Attendees also participated in those hands-on, magic-based activities to help them incorporate magic into their own design teaching practices. Reflections on the workshop are discussed in the conclusion of this paper.

Introduction

Many designers and researchers have increasingly recognized the value of incorporating magic tricks and related principles into design education. Tognazzini (1993) argued the design of magic performances shares similarities with user-centered

product design, as both aim to create engaging experiences based on the psychological understanding of human nature. A successful magic performance usually relies on a combination of sleight of hands and a good psychological understanding of the audience's perceptions. Similar to accomplished magicians, skilled experience designers must master techniques such as employing visual cues to manage users' attention and analyzing user behavior and cognitive processes to optimize the user experience. Several studies have explored how magic and related techniques can be applied to teach design thinking. For instance, Li (2020) used the magic creation process of magicians to help students understand the core concepts of user-centered design, such as empathy, prototyping, user-centricity, and iterative design. Myketiak et al. (2012) also explored using magic tricks to introduce human-computer interaction principles in an outreach program. Those studies also highlight the benefits of using magic to engage students in learning design thinking.

Using magic tricks to teach design thinking is rooted in game-based learning as magic could be framed as “puzzles” or “novel problems”. Similar to playing puzzle games, students can discuss potential solutions to the magic performance and come up with answers together. Game-based learning has shown effectiveness in improving learning engagement and motivating students to invest more in their learning (Partovi & Razavi, 2019). This is crucial for students who are new to the field and need to be engaged in learning about related theories and principles. In addition, game-based learning can help create a psychologically safe environment which encourages students to express their innovative ideas freely (Duncan, 2020). However, to the author's knowledge, there are few programs or workshops helping educators use magic as a pedagogy in teaching design thinking and related concepts.

Author Background

As a semi-professional magician and a member of the International Brotherhood Magicians (IBM), the author has more than ten years of experience designing and performing magic for the audience. On the other hand, his role as a researcher and educator in creativity and design (UX/UI) helped him understand principles, theories, and practices which facilitate design creativity and improve design effectiveness. His experiences in both fields allowed him to use magic to facilitate creativity and teach design principles in the classroom. He has been using magic to teach design thinking in the class for eight years. Beyond that, he has published several journal articles and presented related studies at conferences on how magic could be incorporated into teaching and its influence on students' learning experiences.

Goals and Process

Fifteen attendees joined the workshop. Most of them were instructional designers. The workshop lasts about two hours. This workshop aimed to help attendees learn magic as an innovative method to teach design thinking and related principles. Specifically, the objectives of this workshop were to help them:

- understand the connection between magic performance and design thinking
- recognize how magic can be used to facilitate essential skills of design thinking
- incorporate magic performance into teaching design thinking practices and principles

The following introduces main activities of the workshop:

“Magic Opener”: To raise attendee's interests in the workshop, they were invited to do a warm-up “magic” exercise together. Under the author's guidance, attendees followed the author's instruction to do a series moves. In the end, the author performed an “impossible” move, where he crossed his hands and twisted them in 360 degrees. Following this, the author asked the attendees: “what does magic mean to you?” This question encouraged attendees to share their own definition of magic and prepare them for the upcoming activities.

“Design Thinking”: The author introduced the five main phases of the design thinking process: “Empathize”, “Define”, “Ideate”, “Prototype”, and “Test”. Each phase was explained along with the essential skills and techniques required at each stage.

“Connections”: The author discussed how magic (watching, learning, and performing magic) can serve as a powerful tool for facilitating those essential skills of design thinking. Particularly, he used three magic tricks as examples to demonstrate how magic can facilitate perspective-taking (“Empathize”), divergent thinking (“Ideate”), and failure-tolerance (“test”) skills.

a. Empathy and perspective-taking. The author performed a sponge ball routine where the sponge balls seemed to teleport from magician’s hand to the audience’s hand. He used this trick to highlight how skilled magician design their magic routines with consideration for the needs of diverse audience groups. Following the performance, he highlighted the importance of perspective-taking—being attentive to audience thoughts, behaviors, and emotions—to increase the entertaining value and relatedness of magic.

b. Divergent thinking for ideation: The author demonstrated how magic can be used to facilitate divergent thinking by encouraging people to generate multiple potential solutions for a given magic effect. The author showed the attendees a feather and asked them if they recalled a scene from Harry Potter where Harry Potter and his friends practice their “magic” to levitate a feather. He then invited the attendee to inspect the feather, ensuring it was an ordinary object without any hidden gimmicks. After the inspection, the author placed it in his left hand and, as he lowered his left hand, the feather appeared to magically suspend mid-air. He then asked the attendees to brainstorm all possible methods that could achieve the observed magic effect.

c. “Failure Tolerance” for iterative testing. The author highlighted how iterative testing with the audience plays a vital role in refining magic performances and inspiring the creation of new magic tricks. To succeed as a magician, one must embrace failures and test their magic performance, gather audience feedback, and use that feedback to continuously improve. The author shared a trick to show how audience’s suggestions and feedback helped improved this routine.

“Group Experience”: After learning the connections, attendees were divided into groups and assigned different magic trick videos to watch. Each group was asked to analyze the video assigned, brainstorm the possible methods behind the trick, “recreate” the trick with the related props provided, and perform the trick for other groups and collect their feedback.

“Real-world Application”: To help attendees understand how magic can be implemented in a design class or similar settings, a specific teaching case where the author used magic to facilitate students’ design process was shared with attendees. Specifically, he introduced how watching, guessing, and performing magic tricks— activities discussed earlier in the workshop —were used to facilitate design thinking at different stages (empathize, ideation, prototyping and testing) of their design process. This real-world example aims to help encourage attendees to use magic to enhance their teaching of design thinking in various training or educational contexts.

“Reflection Time”: Attendees were guided to reflect on their magic learning and performing experience in the workshop and discuss how they can use magic to facilitate understanding of design thinking and related concepts. Prompts for reflections included:

- What are your takeaways?
- What connections did you notice between magic and design thinking?
- Would you consider using magic to promote design thinking? why and why not?

Workshop Reflection and Future Work

Overall, attendees enjoyed the workshop, particularly when they witnessed seemingly impossible magic illusions happening right before their eyes. Under the author's guidance, they were able to understand the connections between magic and design thinking.

One goal of the workshop was to help attendees understand how performing magic can facilitate empathy and perspective-taking. This requires them to observe audience's behavior and reactions, thinking from the audience's perspective, and sensing audience's emotions to adjust their performance accordingly. However, since most of the attendees were new to magic, when they performed magic, their primary focus was on executing the moves and hiding the secret of the trick from the audience. The focus on the technique may limit their ability to fully engage with and respond to the audience's behavior, thoughts, and reactions during their performance. For future workshops, to better facilitate this experience, using magic tricks that require more psychological understanding of audience and less on sleight of hands may better facilitate this experience.

The workshop also aimed to facilitate divergent thinking through guessing the "secret" of the magic. From the author's observation, most of the attendees proposed explanations that were theoretically plausible and could potentially work. However, when compared to the actual method used by magicians, it became clear that the magician's method was more practical and efficient. Attendees were amazed by those creative method developed by magicians.

Although most attendees expressed interest in performing the tricks they learned for their students or friends, it is unclear whether and how attendees will integrate magic and related activities into their design thinking teaching and practices. Further follow-up might be needed to assess the long-term impact and application of magic in their respective fields.

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