

ABSTRACT

This study discusses the development of a GPT-4o-based chatbot equipped with prompt engineering techniques to support the design thinking process in creating UI/UX prototypes for a tourism recommendation application. The main problem addressed is the difficulty faced by students in fully applying the stages of design thinking, including challenges in idea exploration, understanding user needs, and creating effective prototypes.

This topic is significant because design thinking is widely used to foster creativity and innovation, yet its implementation is often hindered by the lack of structured guidance. The use of an AI-based chatbot offers a potential solution by providing interactive and context-aware assistance tailored to each stage of the design process.

The proposed solution is a web-based chatbot integrated with the GPT-4o API and equipped with prompt templates aligned with the five stages of design thinking: empathize, define, ideate, prototype, and test. The system was evaluated through an experiment involving two groups, experimental and control, consisting of Informatics and Software Engineering students. Its effectiveness was assessed using the System Usability Scale (SUS) to evaluate prototype usability tested by external respondents and the Creative Problem-Solving Self-Efficacy Scale (CPS-SES) to measure participants' creative self-efficacy.

The results show that the average SUS score exceeded the “Excellent” category, with values above 85 across all groups, and a positive trend in creative self-efficacy scores was observed in the experimental group. However, t-test analysis revealed no statistically significant differences between the experimental and control groups. Despite this, the system demonstrates potential as an AI-assisted learning tool to enhance students' design thinking experience.

Keywords: chatbot, GPT-4o, prompt engineering, design thinking, usability, creative self-efficacy