

Cognitive Dissonance in Artificial Intelligence Utilization: An Empirical Analysis of Human-AI Interaction Dynamics in Educational Settings

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Abstract. This study explores the intricate dynamics of cognitive dissonance experienced during human-AI interactions within educational frameworks. Utilizing a mixed-methods approach, we assessed participants' psychological responses to AI-enhanced learning modules. The findings indicate significant variances in cognitive dissonance levels based on prior technological engagement and pedagogical environment. Our research elucidates the underlying psychological mechanisms and offers insights for optimizing AI integration in pedagogy.

Keywords: Cognitive dissonance, Human-AI interaction, Educational technology, AI in pedagogy, Psychological implications, Technology-enhanced learning, Digital transformation, Machine autonomy

Introduction

In the rapidly evolving landscape of educational technologies, the integration of artificial intelligence (AI) represents a frontier for enhancing instructional methodologies. However, the psychological implications of such integration, particularly the phenomena of cognitive dissonance, are yet to be fully understood. Cognitive dissonance, a state of psychological discomfort arising from conflicting beliefs and behaviors, is amplified in AI-driven educational settings where human agency intersects with machine autonomy. This paper investigates how exposure to AI in educational environments contributes to cognitive dissonance among learners and educators alike. The global push towards digital transformation in education underscores the urgency to comprehend these psychological impacts. By 2026, it is anticipated that AI will be an indispensable component of the educational experience, necessitating comprehensive studies on its implications. This paper

adopts an empirical approach, collecting qualitative and quantitative data to analyze the relationship between AI usage and cognitive dissonance. The structure of this paper is as follows: we begin by examining existing literature on cognitive dissonance and AI in education. Subsequent sections detail our methodological framework and present the findings of our study. The discussion highlights the implications of our research for educators and policy makers, and the conclusion proposes recommendations for future AI-driven pedagogical strategies.

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