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Designing for Cognitive Efficiency: an Empirical Study of Teacher Experiences in an Online Learning Platform

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Abstract

Cognitive load is a critical factor to consider in digital learning, as it directly influences learner engagement, comprehension, and overall success. By managing cognitive load effectively, digital platforms can create more efficient and supportive learning experiences that enhance self-efficacy and learning outcomes. This study investigates the cognitive load experienced by learners in an online learning system, with a focus on understanding how cognitive load, specifically extraneous, intrinsic, and germane loads affect the learning performance. While cognitive load plays a significant role in explaining individual learning differences, there has been limited empirical research on measuring it in the context of online learning platforms. This research aims to assess cognitive load levels, particularly among teachers, associated with the “The Digital Educator: A Primer (English)” course hosted in an online learning platform, FramerSpace of UNESCO MGIEP organization, using cognitive load scale instrument. Quantitative data from self-reported questionnaire and qualitative data from unstructured interviews were collected from 30 middle school teachers (ages 25-50) at a school in Delhi, India. The findings indicated that the course offered less intrinsic load and extrinsic load and greater germane load. Additionally, the study also identifies the pain points from the users that may hinder the learning performance through the lens of Cognitive Theory of Multimedia Learning (CTML). This study presents instructional design strategies grounded in Cognitive Load Theory (CLT) and the Cognitive Theory of Multimedia Learning (CTML) principles to minimize cognitive load in e-learning platforms. Additionally, it explores how insights and results can inform the design of more cognitively aligned and potentially more effective courses.

Keywords: Cognitive Load Theory, E-Learning, Instructional Design, Learning Experience Design,

Multimedia Learning Principles, Online Learning Platforms