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Navigating the Terrain:

Emerging Frontiers in Learning Spaces, Pedagogies, and Technologies

From frustration to fulfilment: Meeting early challenges analysing business transactions

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Transaction analysis, the process of discerning which accounts are impacted (either increased or decreased) by a given transaction, is a fundamental accounting principle. While proficiency in this concept is vital for introductory accounting students, it poses a significant challenge for many. We addressed this hurdle using Excel and Excel VBA to develop a fully automated Journal Entry Learning Object (JELO) spreadsheet designed to aid first-year accounting students in grasping the intricacies of analyzing business transactions.

Grounded in cognitive load theory (CLT), our spreadsheet based JELO provides a user-friendly interface that helps students develop their skills without becoming overwhelmed. Cognitive load theory, pioneered by John Sweller, suggests that learning is optimized when instructional materials reduce unnecessary cognitive load, allowing students to allocate their cognitive resources efficiently toward understanding and mastering the task at hand. CLT distinguishes between three types of cognitive load: intrinsic, extraneous, and germane (Sweller, Ayres, & Kalyuga, 2011).

Intrinsic cognitive load refers to the inherent difficulty associated with a specific instructional topic (Sweller, J. 2010). In transaction analysis, the intrinsic load is naturally high due to the complexity of understanding the impact of transactions on various accounts. To manage this, JELO has three tiers of transaction questions. Students are allowed to progress to more complex transactions only after demonstrating proficiency with the lower levels.

Extraneous cognitive load is generated by inefficient presentation of information to learners (Paas & Sweller, 2014). JELO minimizes extraneous load through its intuitive and interactive design. By providing clear instructions, a logical interface, and eliminating unnecessary information, JELO ensures that students can focus on the essential aspects of transaction analysis without being distracted by irrelevant information.

Germane cognitive load refers to the mental effort required to create schemas and integrate new information into existing knowledge structures (Sweller et al., 2011). JELO enhances germane load by offering scaffolded and immediate feedback. This feedback is designed to reinforce correct responses and guide students through their errors with hints and explanations, facilitating deeper cognitive processing and better schema construction.

Our goal was to make skill acquisition enjoyable and, more realistically, to reduce the pain of learning transaction analysis. The JELO offers an alternative to traditional “drill and practice” methods by providing an easy-to-use, interactive learning tool that dynamically adjusts the difficulty of its questions to match the student's skill level. This adaptive learning approach ensures that students are continually challenged just enough to promote learning without becoming overwhelmed.

Additionally, JELO's feedback mechanism aligns with CLT principles by providing immediate positive reinforcement and corrective guidance. By doing so, it helps students build confidence and competence in transaction analysis, leading to a more effective and engaging learning experience.

By incorporating principles of cognitive load theory, JELO ensures that students are neither under-challenged nor overwhelmed. This careful balancing of students' overall cognitive load facilitates a more effective learning environment, fostering both proficiency and satisfaction in mastering transaction analysis.

Keywords: Cognitive load theory, Active learning, Automated feedback, Scaffolding, Adaptive learning

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