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Authors

DeLeeuw, Krista
Mayer, Richard
Giesbrecht, Barry

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When More Load Leads to Less Distraction in Multimedia Learning: An Event-Related Potential Approach

Krista DeLeeuw

Knowledge Media Research Center

Richard Mayer

University of California, Santa Barbara

Barry Giesbrecht

University of California, Santa Barbara

Abstract: In multimedia learning, the modality effect occurs when students learn better from a lesson containing graphics accompanied by narration than one accompanied by on-screen text. The redundancy effect occurs when students learn better from a lesson containing graphics accompanied by narration than one accompanied by narration and on-screen text. In order to determine the information-processing mechanisms responsible for these effects, 36 students viewed three multimedia lessons in which the words were presented as narration, on-screen text, or both. During the lessons, brief visual distractors were presented and event-related potentials (ERPs) in response were measured. Learners showed a more positive early (P1) ERP response during the graphics+text lesson than during the graphics+narration+text lesson, indicating that more perceptual processing was required for the latter condition. In general, results suggested that perceptual load plays an important role in the modality and redundancy effects, a useful clarification of the cognitive theory of multimedia learning.