

The Interleaving Effect of Subject Matter and Perceptual Modality on Students' Attention and Learning: A Portable EEG Study

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Abstract : To investigate the interleaving effect of subject matter (mathematics vs. history) and perceptual modality (visual vs. auditory materials) on student's attention and learning outcomes, the present study collected self-reported data on subjective cognitive load (SCL) and attention level, EEG data, and learning outcomes from micro-lectures. Eighty-one 7th grade students were randomly assigned to four learning conditions: blocked (by subject matter) micro-lectures with auditory textual information (B-A condition), blocked (by subject matter) micro-lectures with visual textual information (B-V condition), interleaved (by subject matter) micro-lectures with auditory textual information (I-A condition), and interleaved micro-lectures by both perceptual modality and subject matter (I-all condition). The results showed that although interleaved conditions may show advantages in certain indices, the I-all condition showed the best overall outcomes (best performance, low SCL, and high attention). This study suggests that interleaving by both subject matter and perceptual modality should be preferred in scheduling and planning classes.

Keywords : cognitive load, interleaving effect, micro-lectures, sustained attention

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