An eye movement analysis of highlighting and graphic organizer study aids for learning from expository text

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Abstract

This study uses eye tracking technology to examine how study aids such as highlighting and graphic organizers affect cognitive processing during learning. Participants were 130 college students randomly assigned to one of five experimental conditions. In the control group, students read a plain text; in two behaviorally passive conditions, students read a text with key words colored in red or read the same text along with a filled-in graphic organizer; and in two behaviorally active conditions, students either highlighted key words in a text or filled in an empty graphic organizer. Students took tests of rote memory (cloze test) and comprehension (summary test). Asking students to fill in a graphic organizer or providing a filled-in graphic organizer resulted in improvements in performance on both tests, whereas asking students to highlight the text or providing highlighted text improved performance only in the rote memory test compared to students who did not receive any study aids. Eye tracking measures showed that highlighting (in both conditions) primed the cognitive process of selecting: students spent more time fixating on those words colored in red compared with the control condition. In contrast, eye tracking measures showed that graphic organizers (in both conditions) primed the cognitive processes of selecting, organizing and integrating since the inclusion of an organizer substantially affected both where their eyes fixated and moved (i.e. transitions) within the text.

Keywords:
Highlighting; Graphic organizers; Study strategies; Eye tracking; Computer-based learning.