Qualitatively different cognitive processing during online reading primed by different study activities

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Abstract

This article uses eye-tracking technology to examine how study activities such as taking notes or filling in a graphic organizer affect cognitive processing during learning. College students read a computer-presented passage that compared the characteristics of eastern steamboats (top section) and western steamboats (bottom section), either by reading it twice (read-only group), typing notes into a textbox on the right side of the screen (note-taking group), or typing characteristics of the two types of steamboats into a compare-and-contrast graphic organizer on the right side of the screen (graphic organizer group). Compared to the note-taking group, the graphic organizer group displayed more eye movements between the top and bottom of the passage (i.e., integrative saccades, $d = 1.03$), more eye movements between the text and the type-in window on the right side (i.e., constructive saccades, $d = 0.79$), fewer constructive saccades during initial reading ($d = -0.64$), and less time looking to the right side during initial reading ($d = -0.81$); and scored higher on a comprehension test given afterwards ($d = 1.17$), although both study groups outscored the read-only group. Results suggest that students in the note-taking group (and read-only group) tended to use a linear learning strategy in which their eyes followed the text in the order presented whereas students in the graphic organizer group tended to use a generative learning strategy in which their eyes searched for connections between specific information across the passage required to make comparisons.

Keywords:

Graphic organizer; Note-taking; Eye tracking; Learning strategy; Reading.