The Effect of Constraining Eye Movements on Learning Gains and Retention

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Due to COVID-19, millions of K-12 and college students have been required to transition to online school, an underdeveloped and questionable medium for education. Even in hybrid learning platforms in which online students are experiencing the same teacher and same presentations as in-person students, online students report having more difficulty maintaining attention. This raises the question as to what it is about the virtual setting that is interfering with the students' ability to focus. Educational research has established that teacher movement contributes to the learning environment, and experiments on humans and non-human primates have indicated that moving stimuli are better attended to than stationary objects. Neuronal connections between brain regions that control eye movements and regulate alertness and attention could be responsible for this observation. To determine whether constraining a students' range of eye movements while studying effects student learning and retention, participants of varying ages were assigned one of the four screens from which to study. The screen size and the distance from the viewer created a field of view that ranged from 14 to 41 degrees. Comparison of the normalized learning gains of the 4 study groups revealed that increasing the range of students' eye movements did not have a significant effect on student learning. Since last year's data revealed that students that used Virtual Reality (VR) had significantly greater learning gains than traditional learning methods, it can be concluded that the increased range of eye movements produced by VR is not a factor in this increased performance.

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