



Use of Customized Text Can Be Beneficial to Students Who Read Online Materials Under Constrained Visual Conditions

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Abstract. The use of digital materials, such as eBooks and other online content, has become increasingly popular among diverse groups of users due to their portability, ease of access, and cost effectiveness. However, individuals with disabilities and individuals without disabilities, who access the materials under constrained conditions (e.g., dim lighting), have different user needs. The ability to customize text is a potential solution for allowing users with different needs to optimize their online reading environments. The present study examined whether the ability to customize text would improve reading performance and reduce visual fatigue associated with online reading in two experiments. In addition, subjective ratings were obtained to evaluate the perceived usability of a system that allowed for customized text. Experiment 1 provided participants with limited experience with reading text on big or small screens under customizable and non-customizable conditions, and in either normal or dim lighting. In this experiment, we did not find any performance differences, but participants indicated that the use of customized text reduced their visual fatigue and showed a slight preference for using customized over non-customized text. In Experiment 2, participants performed the reading tasks over a longer period of time in a dimly lit room using either a big or small screen. Participants were more accurate in answering reading comprehension questions in the customized text condition. They also indicated agreement with statements about the use of customized text to reduce visual fatigue, and they wanted the option to customize text. Thus, overall, this study showed that the use of customized text could help users read and comprehend information better, as well as mitigate the effects of visual fatigue under constrained viewing conditions.

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