The Study for The Usability of Electronic-Paper Display

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ABSTRACT

This research investigated that the effects of Electronic-Paper Display design on subjects ’ visual performance and subjective preference. This research included two experiments. The first experiment used the simulated e-paper to investigate the effects of bending radius of curvature and text/background color-combinations on subjects ’ visual performance and subjective preference in illuminance. This result of this research showed that the text/background color-combinations had significant effect on subjects ’ visual performance. Subjects ’ visual performance had the worst preference when text/background color-combinations was setting at Text2/ green-like of Cholesteric Liquid Crystal than the other text/background color-combinations. Regarding the preference of subjects ’ subjective preference, result of this research also showed that the bending radius of curvature, text/background color combinations and illuminance all had significant effects on subjects ’ subjective preference. Subjects showed the best preference under the following settings: when the bending radius of curvature was set at 0cm and 10cm; when the text/background color combination was set at Text1/ yellow -like of Cholesteric Liquid Crystal; when illuminance was set at 500lx. The second experiment investigated the effects of display and screen inclination on subjects ’ visual performance and subjective preference in four illuminance conditions. This result of this research showed that the screen inclination had significant effect on subjects ’ visual performance. Subjects ’ visual performance had the best preference when screen inclination was setting at 105 ° than the other screen inclination. In addition, interaction between display and illuminance had a significant effect on subjects ’ visual performance. When illuminance was set as 200lx, subjects showed better preference under Sony LIBRIe, Kolin e-book and penetrant PDA. Regarding the preference of subjects ’ subjective preference, result of this research also showed that the display, screen inclination and illuminance all had significant effects on subjects ’ subjective preference. In addition, interaction between illuminance and display, display and screen inclination also had a significant effect on subjects ’ subjective preference. When display was set as Sony LIBRIe, Kolin e-book and reflective PDA, subjects showed better preference under 2200lx ;display was set as Sony LIBRIe and penetrant PDA, subjects showed better preference under 105 ° .

Keywords : Electronic-Paper ; E-book ; visual performance ; subjective preference

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