

# **The effects of color and shape on learning and concentration using BCI technology**

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**Due to the widespread use of today's technologies and the mechanization of human life, it's important to optimize learning in order to save time, place, and facilities in education and learning. Colors and shapes are the basic foundations of multimedia and educational content. Currently, the most commonly used standards for content creation and educational multimedia are based on being eye-catching and personal tendencies, so understanding the impact of these components on learning and concentration and acquiring knowledge of their impact on the user is vital and can lead to improving individual performance, saving time and training costs, and as the result it would be a competitive advantage. Therefore, the present study aimed to investigate the effect of color and shape on concentration and learning in the form of two tests, which are as follows: • The first test examines the impact of color and shape on learning using an android app. The application stages were completed by 170 people chosen randomly. The results were analyzed by SPSS software using chi-square test, and there was a significant correlation between color and learning as well as the composition of color-shape and learning; but about the relationship between shape and learning no significant value was found. • The second test was designed to investigate the effect of the above materials on concentration using the windows based program and BCI equipment. The test steps were completed by 10 people chosen randomly. Data were analyzed by SPSS software using ANOVA test. According to the results, there was no significant relationship between the concentration peak of people in confrontation of color, shape or their composition.**

**Keywords : Education, color, shape, concentration, learning**

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