The Power of When: The Influence of Different Chronotypes on Students' Academic Performance

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Students' academic achievement could be affected by the disorganization of their study habits and chronotypes. This study aimed at designing a valid and reliable scale to help students to identify their chronotypes and circadian rhythms, along with a mobile application that allows them to organize their daily activities and study schedules to improve academic achievement. To do that, a scale was designed, reviewed by 13 experts, and tested over 1778 middle and high school students to identify four chronotypes (Dolphin, Lion, Bear, and Wolf) and the effectiveness of students' gender, age, and geographical location on their chronotypes. Then, the Mastermind application was designed to direct students, based on their chronotypes, to follow certain studying activities that fit their chronotypes. The application was reviewed by nine experts and tested by conducting Behavioral Trials (One Group Design) for four months. To do that, ten Curriculum Based Assessments (CABs) were designed and reviewed by 35 teachers for pre-and post-assessments to measure academic achievement change for 20 students. Collected data were analyzed using Cronbach's Alpha, Pearson Correlation Coefficient, and Paired Samples (T) Test methods. The results showed the chronotype scale reliability and validity were (0.876) and (0.672), respectively. The results indicated no effect of the study variables on students' chronotypes. The result also showed a high statistically significant (T) value (8.30) of the difference between the pre and post-tests in the behavioral trials. In conclusion, the scale and Mastermind application were influential in determining the students' chronotypes and increasing their academic achievement. Keywords: chronotypes; circadian rhythms; Mastermind; academic achievement.

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