

# EFFECT OF MUSIC ON THE TEST SCORES OF STUDENTS IN CHEMISTRY AND ACCOUNTING

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## **Abstract**

This study examined classical music's effect on exam performance in a college setting by randomising students to listen to Richard Stoltzman's *Maid with the Flaxen Hair* while taking a test for a science and a non-science subject, namely Chemistry as well as Accounting and Finance, respectively. We controlled for: prior knowledge on the subject matter, year in college and age. Findings revealed that there was a slight improvement on Accounting and Finance exam performance when the music was played during the test by a 7.9% and 2.8% increase in two assessments respectively, however Chemistry students exam performance with music declined by 0.3% and 13.5% in both assessments respectively.

*Keywords: music intervention, classical music, anxiety,*

## **INTRODUCTION**

In today's world, technology has become ubiquitous and a part of life. Educators and researchers claim that integrating technology in the classroom has many advantages in the teaching and learning process. Music technology may be approached pedagogically by observing the effects on learning in trying to develop useful, practical and efficient solutions in teaching and learning (Ruismäki and Juvonen 2009).

Integrating music in teaching and learning may have an indirect effect on test anxiety and performance by altering mood. Music has an effect on dopamine which is a neurotransmitter that helps to control the brain's reward and pleasure system. Dopamine release plays an essential role as it induces positive mood during exams, causing students' to have less anxiety, to be energized to focus, fully involved during their exams and perform better. Classical music, especially the music of *Mozart*, has been shown to foster this type of mood during exams (Goldenberg *et al.*, 2013). Therefore, studies on the effects of background music on the learner's test performance is an important area to study because it is a common trend for many young adults to have various types of music or sounds in the background while they are concentrating on tasks such as homework (Chou P.T., 2010).

In line with this, the objective of the present study is to examine classical music's effect on exam performance in a college setting for a science and a non-science subject, namely Chemistry as well as Accounting and Finance, respectively.

## METHODOLOGY

The subjects of this paper are students in the Australian Matriculation (AUSMAT) Programme who are taking Chemistry and Accounting and Finance (ACF). The research was conducted on four classes with a population of 20 to 30 respondents in each class. Two tests were prepared for each subject and the tests were carried out after the lesson was taught. The first test was conducted for 15 minutes with both classes of Chemistry and ACF, with one class being a control group (taking the test without background music) and another being the experimental group (taking exam with background music). Richard Stoltzman's "*Maid with the Flaxen Hair*" with a classical genre was played as the background music during the test. The method was repeated, alternating the group for the second test. The test scores were tabulated and analysed quantitatively in this study.

## RESULTS

| Group  | No. of student | Assessment 1 (With Music) |                | Assessment 1 (Without Music) |                | Assessment 2 (With Music) |                | Assessment 2 (Without Music) |                |
|--------|----------------|---------------------------|----------------|------------------------------|----------------|---------------------------|----------------|------------------------------|----------------|
|        |                | Mean                      | Std. Deviation | Mean                         | Std. Deviation | Mean                      | Std. Deviation | Mean                         | Std. Deviation |
| ACF 1  | 24             | 8.58                      | 1.18           |                              |                |                           |                | 7.17                         | 1.55           |
| ACF 2  | 19             |                           |                | 7.95                         | 1.61           | 7.37                      | 1.67           |                              |                |
| Chem 1 | 23             | 7.52                      | 2.02           |                              |                |                           |                | 5.78                         | 2.07           |
| Chem 2 | 26             |                           |                | 7.54                         | 1.79           | 5.00                      | 1.65           |                              |                |

**Figure 1:** Mean and standard deviation of student's test scores

Based on Figure 1, ACF students performed better with music, as shown by a 7.9% and 2.8% increase in Assessment 1 and 2 respectively, compared to their performance without music. However, Chemistry students seemed to score slightly better under non-music assessments, as indicated by a 0.3% and 13.5% increase in Assessment 1 and 2 correspondingly, compared to their scores with music interference. Generally, ACF and Chemistry students performed better in Assessment 1 than Assessment 2, even though the difficulties of the paper were the same, as Assessment 2 covers more learning outcomes.

## DISCUSSION AND CONCLUSION

The differences in the student's test scores for ACF and Chemistry, with or without background music was not significant, based on the differences in the mean test scores which are less than 1 mark. This could imply that the effect of music can vary a lot from person to person, and there are many other factors which can influence student's test score. Nonetheless, there were several limitations to this research including the absence of an anxiety test for the students; a pre-test which will solidify the research's results and different musical genres or tempos can be used to conduct this experiment. Hence, with a more extensive or tailored music interventions, future researches on this topic could hold promise on breakthroughs to the existing exam policies for the betterment of students' performance.

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