

Influence of Online and Classroom Multi-modal Instruction on Academic Achievement

Valerie L. Trollinger, D.M.E. and John W. Flohr, Ed.D.

Abstract

The purpose of the study was to investigate the extent to which online and multi-modal classroom instruction influences academic achievement of undergraduate students. Instruction was enhanced with online multimodal materials used in the face-to-face classroom presentations and for online assignments. The current study investigates not only longitudinal effectiveness in aural and visual skills learning but also possible connections among increased aural and visual skills and academic achievement measured by overall GPA.

Problem

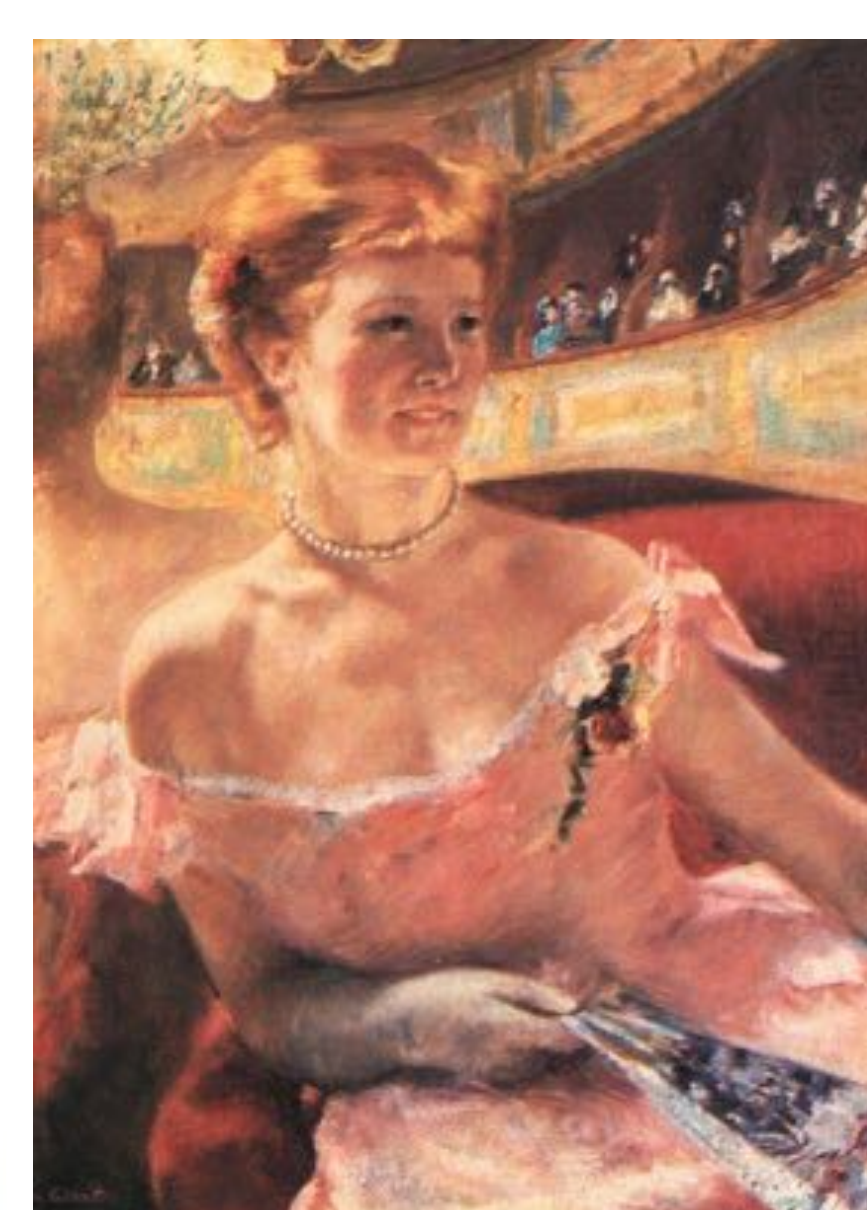
Aural and visual skills have been associated with increased **critical listening skills** (Trollinger & Flohr, 2012). Lack of aural and visual education, and decreases in arts classes in USA public schools may influence select student skills and impede learning.

Purpose

The purpose of the study was to investigate the extent to which multi-modal online and classroom instruction influence academic achievement of undergraduate students. Data were analyzed to determine longitudinal effectiveness in aural and visual skills learning.

Research Questions

To what extent is the variable of **overall GPA** related to **achievement scores** from eight aural and visual assessments of freshman and first semester transfer college students ($N = 249$)? The treatment variable was critical analysis of arts works in relation to critical analysis of music and not simply a pairing of music and a painting.



Relevant Literature

Current research supports the idea that learning occurs via multimodal instruction and the learning may occur concurrently rather than linearly. It is suggested that addressing learning and designing activities to promote concurrent multimodal process may aid in retention and later application of knowledge to problem solving activities.

Boltz, M., Ebendorf, B., & Field, B. (2009). Audiovisual Interactions: The impact of visual information on music perception and memory. *Music Perception*, 27(1), 43-59.

Hopkins, R. (2006). Critical reasoning and critical perception. *Knowing Art*, 107(2), 137-153.

Moreno, R. & Mayer, R. (2007). Interactive multimodal learning environments. *Educational Psychology Review*, 19, 309-326.

Trollinger, V.L & Flohr, J.W.. (2012). *The influence of online multimodal perceptions on critical listening skills*. Walden University Research Symposium, Miami, FL.

Procedures

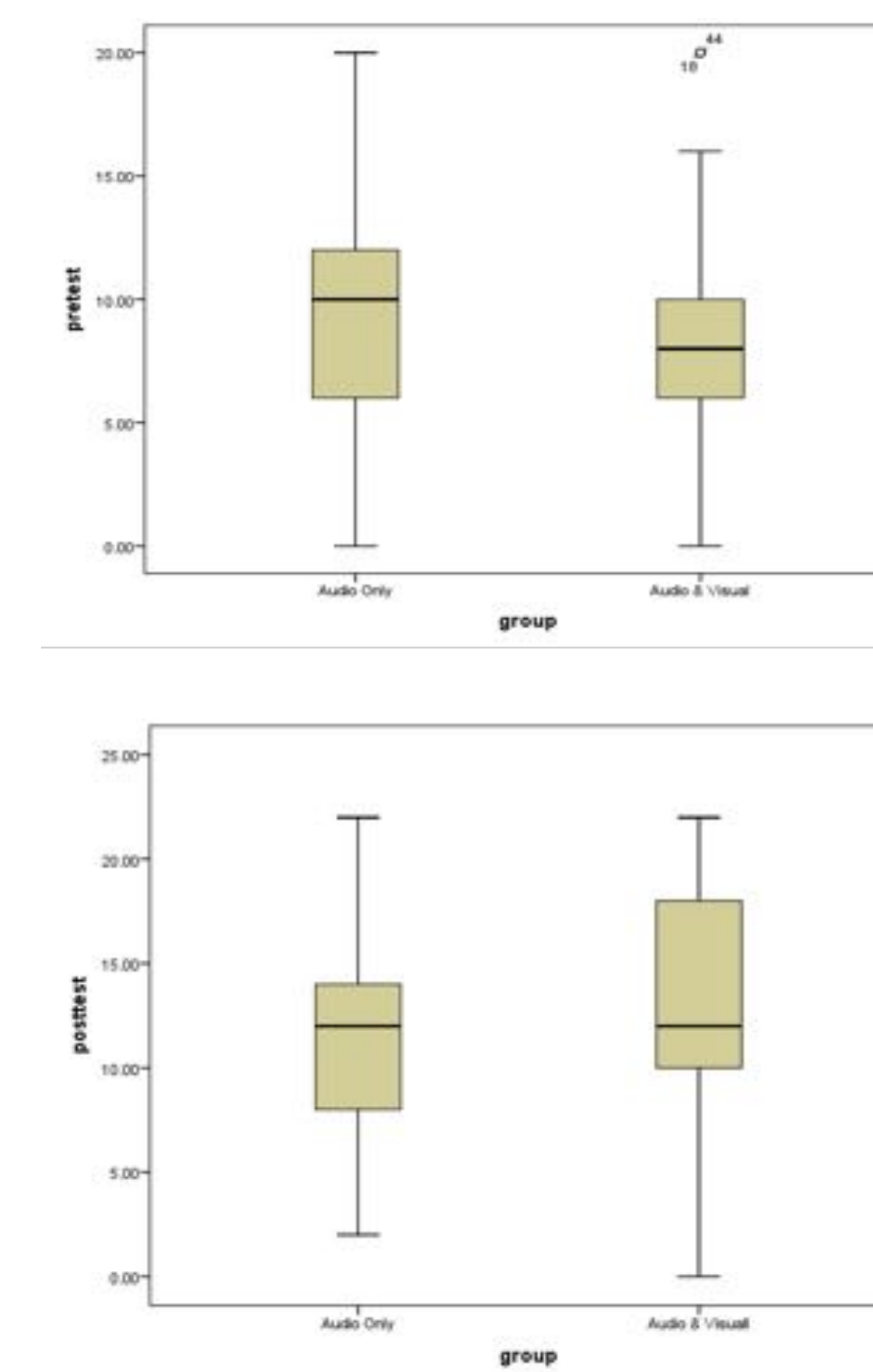
Subjects were undergraduate students enrolled in an introduction to music literature class. The university IRB granted access to grades for the fall and spring semesters. The class instruction included an arts website and face-to-face instruction on how to use the website. Pretest and posttest online assessments provided data for comparison. The pretest was given at the beginning of the 16-week semester and the posttest was given during finals week.

The independent variables were achievement scores from eight aural and visual assessments. The dependent variable was overall GPA.

Data Analysis

Statistical procedures included descriptive statistics, correlations, regression, and discriminate analysis.

Figure 1. Pretest and Posttest



Findings

Pearson Correlation Findings

Students who engaged in the aural-visual critical learning classes scored significantly better on a music listening post-test than students who engaged in only the aural critical learning ($r = .20, p = .002$). There was a statistically significant relationship between how students scored on the visual-aural cumulative test for the semester and GPA for the semester following the course ($r = .21, p = .04$).

GPA

Pre and post test listening scores did not have any relationship to GPA for both the semester the student took the Introduction to Music Literature course and the semester immediately following. Regression on predictors of GPA (posttest point score and aural/visual structural analysis ($r = .254$) revealed a significance of $p = .056$ (approaching .05 level). When the variable of posttest score was removed from the equation, ANOVA revealed that aural/visual structural analysis strength increased in predicting GPA of the semester following the course ($df = 1, 93: F = 4.411; p = .038$).

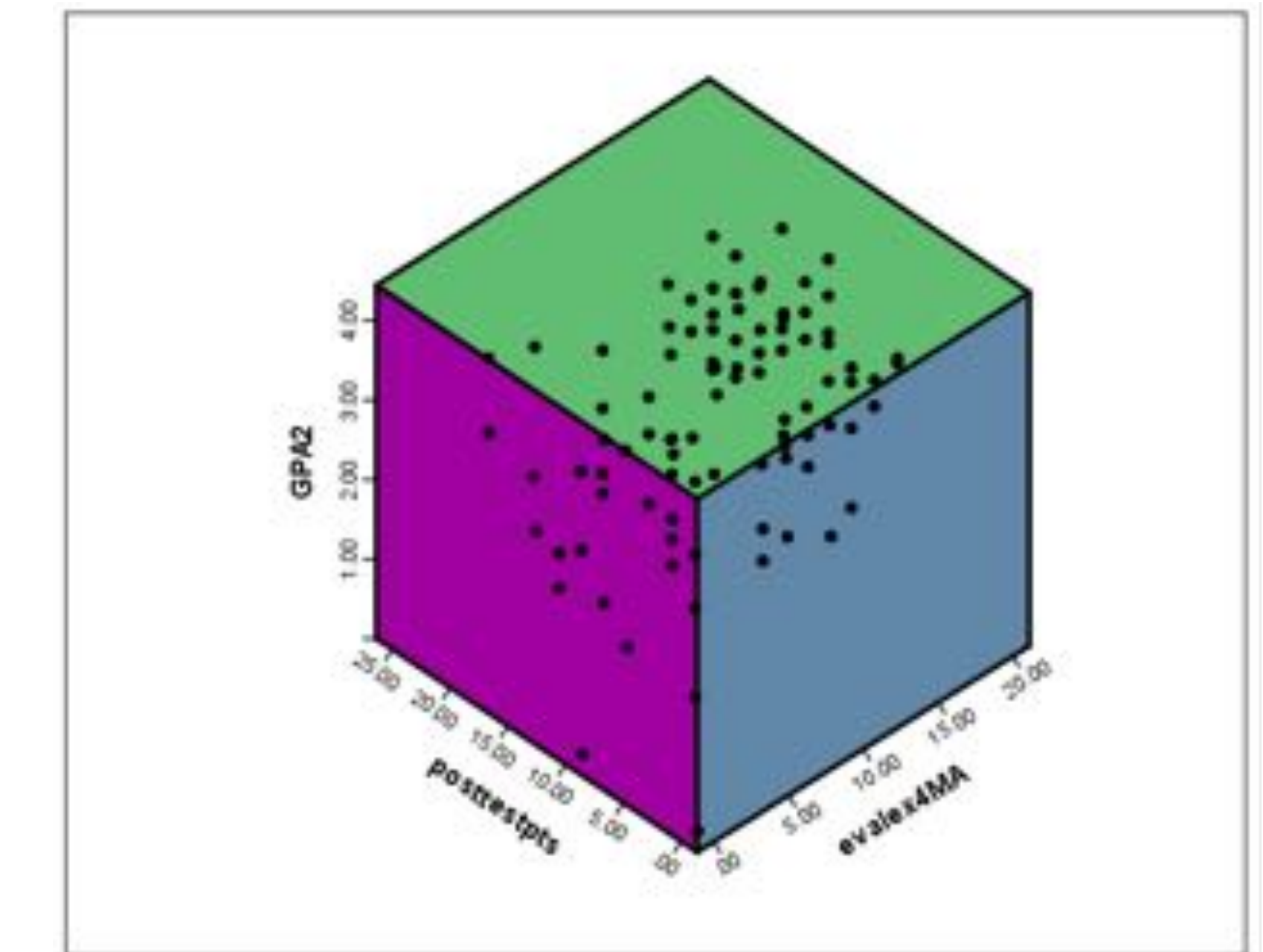


Figure 2. Three dimensional plot of relationships among GPA, aural/visual structural analysis, & posttest

Limitations

The study included students from a single North Eastern university with self-selection into one of numerous arts general education courses required for all university students. It is not possible to ascertain from the data if students are using the critical listening and visual skills in other courses.

Conclusions

More research on multimodal instruction and transfer to other learning is needed. If students are showing a transfer of skills, then it is important to see if particular courses in the semester following the Introduction to Music Literature semester are related.

Social Change Implications

Multimodal strategies (e.g., visual with aural) developed across multiple disciplines may promote social change by alleviating societal defined boundaries in academic areas.