Web-Based vs. Classroom Instruction of Statistics

Dissertation

Presented in Partial Fulfillment of the Requirements for the Degree Doctor of Philosophy
in the Graduate School of The Ohio State University

By
Jonathan Ramon Baker, B.S.Ed., M.S.
College of Education and Human Ecology

The Ohio State University
2009

Dissertation Committee:
Patricia Brosnan, Advisor
Dennis Pearl
Terri Bucci-Beal

Abstract

This study compares the performance and experiences in an introductory statistics course across two modalities: web-based and classroom-based instruction. The research was conducted in classrooms from each learning environment for two teachers at a large midwestern community college. The results from the Pre-Test, Post-Test, and departmental final exam indicated that students in web-based statistics courses can have levels of average achievement comparable to that of their classroom-instructed counterparts. Yet, the facts that distance learners entered the course with stronger levels of mathematical preparedness, and had greater proportions of students at the extremes of the performance indicators, jointly challenge the notion of web-based instruction being "as good as traditional." The faculty interviews, student questionnaires, and both virtual and physical instructional observations informed the researcher that the successful teaching strategies in the classroom can have an online comparative. Independent of modality, students desire teacher immediacy. It is also confirmed that the asynchronous nature of online learning that allows students to learn at their own pace will continue to drive student interest in spite of any potential barriers. The researcher recommends that future studies control for relevant student characteristics and any instructor effect to measure overall learning gains over longer periods of time. Hybrid courses were discussed as being the next modality on the horizon that would merit further research.