A critique of the article, "Distance education: relationship between academic performance and technology-adept students".

This critique offers a summary and critical analysis of a recent research article by C.K. Duvall and R.G. Schwartz (2000). This critique will summarize the major points of the article, and then offer an analysis of the effectiveness of the work as a scholarly product. It will be suggested that this particular piece of research is intrinsically flawed, as it has been presented, and is inappropriate for publication in its current form.

Purpose and research questions

The purpose of this article was to examine evaluation data from a distance education program being offered by a private university. The students in focus are all graduate level business students. The intent was to evaluate the impact of technology-assisted learning on academic outcomes. The performance of distance learners was compared to on-campus students. A secondary goal was to examine the relationship between academic performance and the degree of technology adeptability of students. The research questions were phrased as null questions: first, that there is no difference in academic performance between the distance and on-campus students; and second, that there is no difference in academic performance based upon a student's technology adeptability.

Methods

This was a quantitative study with an overall sample of 33 graduate students enrolled in business courses. Of the 33 students, 14 were distance learners and 19 were on-campus students. Survey instruments were used to collect the data. Quantitative analytical tools included: descriptive statistics; t-tests; regression analyses; and ANOVA

(analysis of variance). The dependant variable was specified as final grades. Independent variables included gender, marital status, age and technology-adeptability.

Findings

Findings of the quantitative analyses suggest that there is no significant difference in the academic performance of students who are more technology-adept than those who are not. There was also no significant difference found in the academic performance of distance learners and on-campus students – *when gender is controlled for*. Significant gender differences were found, however, between distance learners and on-campus learners.

Critique

This study is riddled with methodological and design errors that make its findings unsubstantiated at best. The sample size and nature is problematic. The data collection and variable definition is problematic. The application of quantitative techniques is problematic.

The sample is too small for the techniques being used. For this type of quantitative analysis, particularly regression and ANOVA, a much larger sample size would be required. This is an elementary point that should have precluded the use of such techniques, and should have been a red flag to reviewers. For a student's t-test the sample of 33 may be adequate, but a larger sample would certainly inspire more confidence in the results. To compound the basic size problem with the sample, it is also a relatively non-representative group for a number of factors. It is comprised solely of business majors and it is only graduate students. Within the graduate student population you are likely to see much less academic variation, in terms of final grades, than in an

undergraduate population. This weakens attempts to find statistical significance with grades as the dependent variable. It also hampers the overall generalizability of your findings.

The data collection was based upon the use of a survey instrument that picks up the key variable of technology-adeptability in a rather vague and unreliable way. Subjects were simply asked to self-report on their degree of comfort with technology. This will vary greatly, with some people who are quite computer-literate expressing a lack of confidence due simply to their perspective relative to others. This variable is defined poorly and was collected unreliably. It would have been preferable to develop a more concrete, perhaps quantitative, instrument for assessing this variable. Even if arguable, it could have been clearly delineated for the knowledge of readers and subjects alike. Other variables are also dealt with rather murkily.

As far as the application of the analytical techniques goes, the selection of significance levels is poor and one of the key techniques of the regression analysis is very unclear. One research questions was addressed at the .05 level, which is the standard. Another was addressed at the .07 level. This was the one that generated minor significance in gender differences. It inevitably leads to the speculation that the test was run a second time at a lower threshold in order to find significance. This test should also have been reported at the .05 level. In regard to the gender variable, it was also indicated that when gender was controlled for there was no difference. How this was done is not clearly indicated.

The problems with the sample, data collection, and statistical analysis lead to a very weak contribution to the literature, one that should not have been published in a

referred journal. This leads me to question the quality of the journal in which this piece was published.

I had the same question.