

SoTL in Higher Education Small Grant Program
Findings

Project Title: *PROMOTING STUDENT INTEGRATION OF COURSE
CONTENT THROUGH THE USE OF WEB-BASED
QUIZZES*

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Introduction

This report will describe findings of a study that sought to examine the efficacy of using Mallard web-based quizzes for promoting social work students' comprehension of text content for SWK 223, Human Behavior in the Social Environment.

Mallard on-line quizzes were incorporated into the course Spring semester 2001 in an effort to increase student out-of-class interaction with course text. Students were able to earn extra credit by taking quizzes that covered chapter readings. Quiz structure was developed so that students could take the quizzes unlimited times and incorrect answers were indicated, but correct responses were not provided. Students would then be able to locate correct responses in the text and retake the quiz to improve their score. There appeared, although not measured, to be a correlation between student use of Mallard and performances on in-class tests.

It was hypothesized that comprehension of text content would be promoted through the use of web-based quizzes as evidenced by higher in-class test scores, final course grades, and instructor evaluations than control group. Two sections of HBSE were offered in the Fall of 2001. Section 01, the experimental group ($N = 29$), was taught by the researcher. Section 02, the control group ($N=35$), was taught by another instructor. A 30-item pre-test was administered to both course sections within the first two weeks of class. Questions were selected from the two in-class tests that were administered during the semester. The "post-test" consisted of the same questions presented in the pre-test, however, questions were administered within the two 50-item objective tests. Final course grades and instructor evaluations were also used for triangulation purposes.

Findings

Both experimental and control groups consisted of 25 students. Number of participants decreased due to several factors; class withdrawal, failure to sign consent form, and non-attendance for either pre- or post-test. Students ranged in age from 20 to 44 years of age with 74% being 21 to 22 years old. Students were predominately female (94%) and predominately Caucasian (92%). The majority were juniors (74%), however, an almost equal amount were sophomores (5%) and seniors (7%), and one student had already completed an undergraduate degree. Experimental and control groups were comparable as far as basic demographic information (see Table 1 and 2). The only marked difference noted was in administrative type. The majority (64%) of the experimental group were *2-year transfer* students, while only 8% of the control group fell in that category. The control group consisted of more (52%) *native* students, having entered ISU as freshmen, than the experimental group (28%). The mean GPA between the two groups was the same (3.0), however, the experimental group had a smaller range (2.25 low to 3.75 high) than the control group (1.90 low to 4.0 high).

Table 1 Experimental Group Demographics (N=25)

Sex	Race	Class	AdmType	GPA
M = 2	White = 23	Soph = 3	Native = 7	Mean = 3.00
F = 23	AfAm = 1	Junior = 19	4-yr Xfer = 2	Min = 2.25
	Hispanic = 1	Senior = 3	2-yr Xfer = 16	Max = 3.75

Table 2 Control Group Demographics (N=25)

Sex	Race	Class	AdmType	GPA
M = 1	White = 23	Soph = 2	Native = 13	Mean = 3.00
F = 24	AfAm = 1	Junior = 18	4-yr Xfer = 1	Min = 1.90
	Hispanic = 1	Senior = 4	2-yr Xfer = 2	Max = 4.0
		Graduate = 1	Graduate = 1	

Pre-Post Tests

Findings indicated a significant improvement in test scores from first to second

administration for both the experimental and control groups. The experimental group had a mean pre-test score of 15.64 and a mean post-test score of 23.36, a difference of 7.72. The control group had a mean pre-test score of 15.36 and a mean post-test score of 21.32, a difference of 5.96. A comparison of the means indicated a significance of .051, which nears significance at 0.05.

Final Grades

Participants' final grades were analyzed and compared for both the experimental and control group. The majority (48.1%) of the control group earned a B in the course, 29.6 of the students earned a C and 14.8 percent earned an A. There were no grades lower than a C overall. The grades for the comparison group were less evenly distributed with 40 percent of the students earning a B and 60 percent an A. The difference between the final grade means for both groups was found to be significant ($p=.000$).

Instructor Evaluations

Students complete evaluations at the end of the course on 36 items. Evaluations contain two sections; Part I is comprised of 20 questions designed to evaluate the instructor and Part II consists of 16 questions to evaluate the course. All responses are answered on a 5-point Likert scale with a positive skew from low to high. There was no significant difference between overall findings for both course sections. The experimental group had a mean of 4.17 on a 5.0 scale, and the control group had a mean of 4.48. It is important to note that because the student evaluations are collected anonymously, it was impossible to eliminate submissions by students who were not study participants. The overall return rate for evaluations was 24 for the experimental group and 29 for the control group, which could have impacted findings due to small sample size.

Conclusion

The findings of this study indicated that the correlation neared significance (.051) between the use of Mallard web-based quizzes and difference between pre- to post-test means on in-class tests.

Impact on Researcher and Future Plans Relating to SoTL

Although the findings were inconclusive, this study demonstrated at the very least that the use of Mallard was not harmful to the student performance and should be considered as a viable pedagogical approach to presenting material. I was encouraged by this study and have been inspired to explore other ways to incorporate technology (WebCT, E-journaling, E-reserve) into my teaching and to continue to integrate formative assessment as a means to monitor student progress and the efficacy of chosen strategies.

Impact on Students

Anecdotally and through formative assessments (one-minute papers) my students indicated using Mallard enhanced their learning experience as an out-of-class guide and a review of course readings. Students who were not in my class expressed a desire to have access to Mallard as a learning tool.

Many of the students who used Mallard had not previously had experience with an asynchronous learning environment. Their exposure to such technology (if not anything else) seems to have increased their level of competency and comfort using the internet and conversely, those who did not may be more open to that possibility when it presents itself.