

An Examination of Student Learning: Test Preparation and Test Anxiety



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Background



- In general, educators consider tests a valuable tool to evaluate student learning, motivate student achievement, assess teaching effectiveness, and reinforce student learning (Gross Davis, 2001).
- Little research has examined neither the effect of student's using reference aids such as notes on exam scores and course grades nor its effect on student study behaviors.

Background



- When teaching information systems to college students, Duncan (2007) found that exam score averages by course section did not differ based on the use of notes but individual exam scores were statistically significantly better for students who used notes
- When examining student preparation for exams researchers found that testing increased stress levels among students (Wasylikiw, Tomes, & Smith, 2008)

Purpose



- Examine student learning in an undergraduate social science research methods course
- Specifically, relationships between student's test preparation behaviors, test anxiety, test grades, cumulative course grades, and the use of notes during the exam were examined.

Sample



- **Fall 2012**
 - 56 students
- **Spring 2013**
 - 113 students

Pilot Study Design



- Received IRB approval
- Students were told about the study on the first day of class and received information in the syllabus
- Students were reminded about the study before each exam
- Three identical exams were given during the 2012 fall and 2013 spring semesters
 - 50 minutes
 - Each exam included approximately thirty multiple choice questions and three application questions.
 - Both groups were also provided the same study guide outlining important concepts.

Pilot Study Design



- An adaptation of the Test Anxiety Inventory (Taylor & Deane, 2002) was administered to students during the fall 2012 (two sections) semester (control group) and spring 2013 (two sections) semester (comparison group).
 - Students completed the survey in class immediately following the exam to increase the likelihood of accurate recollections.
- The comparison group was allowed to use one page of handwritten notes during each exam.
 - Both groups were allowed to use one page of notes on exam 3.
- A third party (faculty member) collected the surveys and kept the surveys until final grades were submitted.

Survey



- Overall, how much total time did you spend studying for this test? _____ hours
- How much time did you spend specifically memorizing information? _____ hours
- How many days before the exam did you begin studying? _____ days
- For this test, I studied
 - a) Mostly by myself
 - b) Mostly with a partner or group
 - c) Both

Survey (continued)



- During this test, I felt very tense.
 - Almost never
 - Sometimes
 - Often
 - Almost always

- In general, I wish examinations did not bother me so much.
 - Almost never
 - Sometimes
 - Often
 - Almost always

- In general, I seem to defeat myself while working on important tests.
 - Almost never
 - Sometimes
 - Often
 - Almost always

Survey (continued)



- In general, I feel very panicky when I take an important test.
 - Almost never
 - Sometimes
 - Often
 - Almost always
- In general, during examinations I get so nervous that I forget facts I really know.
 - Almost never
 - Sometimes
 - Often
 - Almost always

Hypothesis



- Students using notes will perform better than students who do not use notes during the exam

Test Preparation Behaviors



	Exam 1		Exam 2		Exam 3	
	Fall M	Notes Spring M	Fall M	Notes Spring M	Notes Fall M	Notes Spring M
	Hours					
Hours spent studying	5.6	5.4	6.8	4.7	6.0	3.8
Hours spent memorizing	2.5	2.3	2.7	1.9	2.5	1.5
	Days					
How many days before the exam did you begin studying?	3.3	3.3	2.6	2.4	2.5	2.1

For this test, I studied...



	Exam 1		Exam 2		Exam 3	
	Fall %	Notes Spring %	Fall %	Notes Spring %	Notes Fall %	Notes Spring %
Mostly by myself	90.9	78.6	90.2	83.0	92.6	85.1
Mostly with a partner or group	1.8	7.8	2.0	6.00	1.9	6.9
Both	7.3	13.6	5.9	11.0	5.6	7.9
Did not study	0.0	0.0	2.0	0.0	0.0	0.0

Scale of Test Anxiety



- Summed, the five questions create a scale of test anxiety
 1. During this test, I felt very tense.
 2. In general, I wish examinations did not bother me so much.
 3. In general, I seem to defeat myself while working on important tests.
 4. In general, I feel very panicky when I take an important test.
 5. In general, during examinations I get so nervous that I forget facts I really know.
 - ✦ Almost never
 - ✦ Sometimes
 - ✦ Often
 - ✦ Almost always

- Minimum = 5 and Maximum = 20
 - Lower score indicated less anxiety

Scale of Test Anxiety



Independent Samples t-test

	Mean (SD)		
	Fall 2012 (n=56) M (SD)	Spring 2013 (n=113) M (SD)	t
Exam 1	11.7 (3.9)	10.3 (3.6)	2.22*
Exam 2	11.3 (3.6)	10.4(3.6)	1.51
Exam 3	10.8 (3.5)	9.9(3.4)	1.59

*p < 0.05

Grades



Independent Samples t-test

	Mean (SD)		
	Fall 2012 (n=56) % M (SD)	Spring 2013 (n=113) Notes % M (SD)	t
Exam 1	84.4 (9.5)	86.1 (9.4)	-1.08
Exam 2	85.5 (8.2)	85.2 (10.4)	0.11
Exam 3 - Notes	88.8 (8.2)	85.5 (10.0)	2.18*
Overall Course	88.5 (8.7)	89.1 (8.3)	-4.41

*p < 0.05

Anxiety and Exam Grades



Bivariate Correlation Matrix

	Anxiety	
	Fall 2012	Spring 2013
Exam 1	-.398**	-.174
Exam 2	-.139	-.025
Exam 3	-.018	-.274**

Negative relationship between anxiety and exam scores.

As anxiety increased exam scores decreased.

** $p < 0.01$

Hours Spent Studying and Anxiety



Bivariate Correlation Matrix

	Anxiety	
Hours spent studying for...	Fall 2012	Spring 2013
Exam 1	.184	.221*
Exam 2	.295*	.211*
Exam 3	.162	.169

Positive relationship between number of hours spent studying and anxiety.

As hours spent studying increased anxiety increased.

**p < 0.01

Other factors that may have influenced the results...



- Allowing notes may instill a false sense of confidence such that students may procrastinate and not prepare thoroughly for the exam
- The opportunity to use notes may provide an incentive for some students to prepare thoroughly for the exam
- The quality of student prepared notes can vary considerably

Questions or Comments



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References



- Duncan, D. (2007). Student performance shows slight improvement when open notes are used during information systems exams. *Journal of Information Technology Education, 6*, 361-370.
- Gross Davis, B. (2001). *Tools for teaching*. San Francisco, CA: Jossey-Bass.
- Taylor, J., & Deane, F. P. (2002). Development of a short form of the test anxiety inventory (TAI). *The Journal of General Psychology, 129*(2), 127-136.
- Wasylikiw, L., Tomes, J., & Smith, F. (2008). Subset testing: Prevalence and implications for study behaviors. *The Journal of Experimental Education. 76*(3), 243-257.