



Supplemental Peer Instruction: Improving Course Material Mastery

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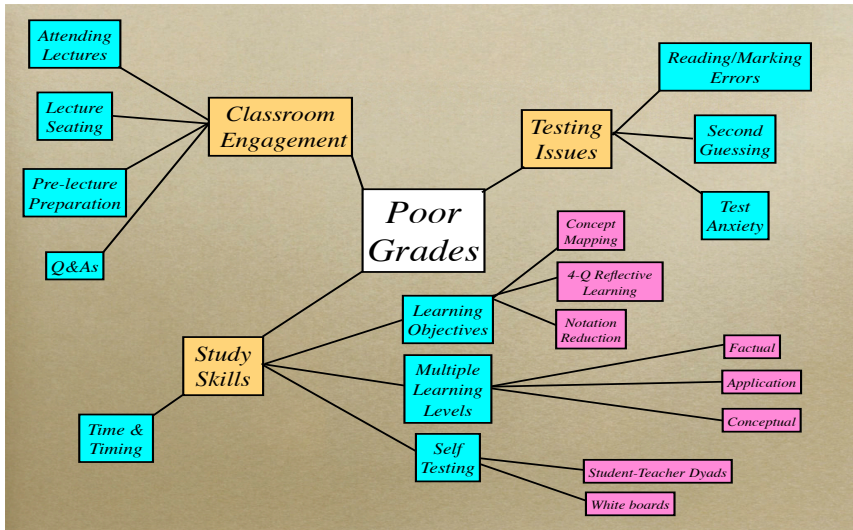
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Rationale

Students in transition (i.e., high school to college, community college to university, lower to upper division courses) often find themselves poorly equipped to handle course material at the next level of their educational experience. Many report that the skills that were successful in the past now produce grades far below expectation. This program uses peer and graduate TAs to facilitate the use of empirically-based, highly effective and efficient study strategies. The program provides 1) seminar based training for peer/graduate TAs and 2) Supplemental Learning Sessions (3/week) offered to undergraduates enrolled in lecture courses.

Diagnostic Rubric



Design

Data from a large (n = 371 after drops) General Psychology class were collected during each of four unit exams through completion of a questionnaire attached to the test booklet. The questionnaire surveyed the degree to which students adopted in the current unit a set of classroom/lecture engagement practices and study skills as presented in a supplemental text (*The A Game: Nine Steps to Better Grades*, Nautilus Publishing, 2011) and peer/graduate TA-led 3x/weekly Strategic Learning Sessions. Among practices/skills that were dichotomously coded, students who did and did not engage in the practices/skills were compared on their exam scores for each unit using a series of t-tests for independent samples. In instances where practices/skills were not dichotomous, correlations were run on level of engagement with each practice/skill with examination scores. Analyses were run separately for high-achieving students in the Provost’s Scholars program (PS mean ACT = 28.6) and the General Student Population (GSP: mean ACT = 21.3) simultaneously enrolled in this course.

Table 1. Student exam performance as a function student classroom engagement/study techniques .

Exam	Student Group n	Test Scores*	Test Performance			Correlations with Scores			
			Learning Objectives	Concept Maps	Gains Self-Testing	# Study Tips	# Lectures Attended	# Reading Assignments	# Study Sessions
1	GSP n=278	64%	3.8% n=120	1.3% n=15	5.5% n=150	0.16	0.12	0.11	0.12
	PS n=113	84%	3.4% n=53	4.5% n=8	3.7% n=72	0.21	0.17	0.19	0.17
2	GSP n=218	71%	4.2% n=116	4.0% n=34	5.8% n=143	0.17	0.15	0.02	0.16
	PS n=97	86%	5.0% n=48	1.2% n=10	1.4% n=64	0.03	0.25	0.07	0.14
3	GSP n=262	66%	2.5% n=120	1.5% n=15	5.5% n=150	0.16	0.12	0.11	0.12
	PS n=112	84%	3.5% n=53	4.5% n=8	3.7% n=72	0.04	0.08	0.19	0.17
4	GPS n=200	66%	2.1% n=103	2.9% n=30	6.6% n=146	0.03	0.07	0.02	0.18
	PS n=91	76%	4.8% n=37	3.4% n=8	1.5% n=61	0.03	0.19	0.19	0.19

GSP = General Student Population; PS = Provost Scholar
* = test scores for each exam significantly different between GSP and PS
Highlighted values statistically significant at $p < 0.05$

Table 2. Classroom seating zones (500 seats).

	Lecture Podium	
2	1	2
4	3	4
6	5	6

Table 3. Test performance as a function of classroom seating (see Table 2).

Exam	Student Group	1	2	3	4	5	6
1	GSP p=ms	70% n=36	66% n=61	69% n=32	66% n=57	63% n=35	67% n=35
	PS p<0.005	86% n=29	83% n=22	87% n=33	80% n=17	77% n=8	66% n=3
2	GSP p<0.005	69% n=35	75% n=33	63% n=56	60% n=46	63% n=26	67% n=22
	PS p<0.05	84% n=26	86% n=26	75% n=16	79% n=19	80% n=5	79% n=5
3	GSP p=ms	70% n=36	62% n=60	67% n=32	65% n=57	63% n=35	62% n=35
	PS p<0.03	86% n=29	83% n=22	87% n=33	80% n=17	77% n=8	66% n=3
4	GPS p=ms	71% n=25	69% n=23	66% n=49	64% n=44	72% n=23	64% n=30
	PS p=0.08	82% n=17	81% n=19	74% n=18	74% n=18	75% n=9	65% n=8

GSP = General Student Population; PS = Provost Scholar
Highlighted values statistically significant seating effect

Implications

This program has a number of implications for students in transition and the faculty that teach them. First, a diagnostic rubric enables faculty and TAs to examine three areas of student behaviors & skills that impact course material mastery and exam performance. Second, the program offers evidenced-based strategies to enhance student mastery of course content leading to better grades. The likelihood that students will continue in their college careers and complete degree programs is dependent upon many factors, not the least of which is developing the set of metacognitive skills to succeed in college. Furthermore, this program also involves the use of peer and graduate TAs in supplemental instruction. Thus, it has an added benefit of exposing students to the scientific literature on teaching and learning and giving those TAs an opportunity to experience a small component of the teaching profession that may guide them in career selection.

Syllabus

PSYCHOLOGY 401
UNDERGRADUATE INTERNSHIP IN PSYCHOLOGY
PEER TEACHING ASSISTANTSHIP
Spring Semester 2012

INSTRUCTOR: Kenneth J. Sufka, Ph.D., Professor of Psychology, 311B Peabody Building, 915-7728, pysufka@olemiss.edu
COURSE DESCRIPTION: Psy 401: Internship in approved work settings under professional supervision. 3 cr hrs. Z-graded
COURSE OBJECTIVES: This internship is designed to provide exceptional students an opportunity to learn about the science and practice of teaching by serving as a peer teaching assistant for Psy 201: general Psychology and/or Psy 319: Brain and Behavior. The particular emphasis of this internship is focused on promoting the acquisition and implementation of metacognitive skills to enhance student learning in General Psychology and Brain and Behavior courses.
EXPECTATIONS:
1) Peer TAs will meet with me weekly during the first ½ of the term (Monday 2-3pm in 309 Peabody) to discuss readings on techniques in teaching metacognitive skills and teaching ethics. You will need to be ready to discuss such material in a meaningful way with your Peer TA colleagues.
2) Peer TAs will provide 2-3 study sessions/week for 1hr each. These sessions are designed to promote the acquisition of metacognitive skills and to clarify course content, the former being more important.
3) Peer TAs are advised to attend lectures in those area of the course that require a bit of a refresher. You are welcome to sit through the entire lecture series.
4) Peer TAs will serve as proctors for the exams.
5) Peer TAs will meet with me on an ad hoc basis during the last ½ of the term to discuss progress in Psy 201 and 319 students to acquire of these "high-yield" study techniques.

COURSE READING MATERIALS:
Sufka KJ (2011) *The A Game*. Nautilus Publishing Company.
Bjork RA (2001). How to succeed in college: Learn how to learn. *APS Observer*, 14, 3-9.
Karpicke JD, Bauernschmidt A (2011) Spaced retrieval: absolute spacing enhances learning regardless of relative spacing. *Journal of Experimental Psychology*, 37, 1250-1257.
Karpicke JD, Blunt JR (2011) Retrieval practice produces more learning than elaborative studying with concept mapping. *Science*, 331, 772-775.
Karpicke JD, Roediger HL (2008) The critical importance of retrieval for learning. *Science*, 319, 966-968.
Eriksson J, Kalpouza G, Nyber L (2011) Rewiring the brain with repeated retrieval: A parametric fMRI study of the testing effect. *Neuroscience Letters*, 505, 36-40.
Bembenutty H (2008) The Scholarship of Teaching and Learning Corner. The teacher of teachers talks about learning to learn: An interview with Wilbert (Bill) J. McKeachie. *Teaching of Psychology*, 35, 363-372.
Berry JW, Chew SL (2008) Scholarship of Teaching and Learning Exemplars. Improving learning through interventions of student-generated questions and concept maps. *Teaching of Psychology*, 35, 305-312.
Dietz-Uhler B, Lanter JR (2009) Using the four questions technique to enhance learning. *Teaching of Psychology*, 36, 38-41.
Ramirez G, Beilock SL (2011) Writing about testing worries boosts exam performance in the classroom. *Science* 331, 211-213.
Novak JD, Canas AJ (2008) The theory underlying concept maps and how to construct and use them. Technical Report IHMC CmapTools 2006-01 Rev 01-2008 Florida Institute for Human Machine and Cognition.
McKeachie WJ, Svinicki M (2006) *McKeachie’s teaching tips: strategies, research and theory for college and university teachers* (12th ed).

Ch. 16. Active learning: cooperative, collaborative and peer learning, pp. 213-220.
Ch. 23. Teaching students how to become more strategic and self-regulated learners (by CE Weinstein). pp. 300-317.
Ch. 24. Teaching thinking (by J Halonen). pp. 318-324.
Ch. 25. Teaching of ethics and the ethics of teaching. pp. 325-341.

For PDF copies of poster, syllabi and other materials, please contact 1st author at pysufka@olemiss.edu.