
DOES INCREASING TEXTBOOK PORTABILITY INCREASE READING RATES OR ACADEMIC PERFORMANCE?

By Georgeana Stratton, Ph.D.

Unfortunately, too many college students are not reading the required textbook material for their courses. One survey of physics students found that less than 40% of students in the introductory physics course regularly read the textbook (Podolefsky & Finkelstein, 2006). Psychology students read only 27.46% of the assigned readings before class and only 69.98% before an exam (Clump, Bauer, & Bradley, 2004). In one introductory economics course only 17% of students reported completing all assigned readings (Schnieder, 2001). Two more studies with community college populations found that a shocking one-third to three-fourth of students failed to complete any portion of assigned readings before their psychology and education classes (McDougall & Cordeiro, 1993; McDougall & Cordeiro, 1992), while one survey conducted at two four-year universities found that over 78% of their

“If students were able to access the textbook and download it in audio form to an MP3 device... then they might be able to cover more textbook content, because they could listen to the recordings during their commutes, at the gym, and many other places that MP3 players are found.”

freshman and sophomore students reported not reading the textbook *at all*, or reading it only sparingly, for at least one introductory course (Sikorski, et al., 2002). These are disappointing figures, especially given that research indicates that greater academic achievement is associated with reading text material before coming to lecture (Phillips & Phillips, 2007; Terpstra, 1979), and that textbook reading not only enhances content comprehension and retention, but “improves reading comprehension in the discipline overall” (Ryan, 2006, p. 135). Even though students themselves expect to do more poorly

in a class in which they skim or skip textbook material (Elias, 2005), study after study indicates that students are spending far less time than the rule of thumb for college study time (two hours of study per week for each credit hour) (Fitzpatrick & McConnell, 2009).

Most interventions designed to increase textbook coverage focus on potentially punitive measures, such as reading quizzes. Though these measures do tend to boost textbook coverage compared to controls, this increased self-reported textbook coverage has not been reliably correlated with academic achievement (McDougall, 1996), and may deter students from taking or remaining in the class. In addition, many of these measures take away valuable class time and increase time faculty spend on grading, making these assessments unfeasible methods of increasing textbook coverage for many teachers. Indeed, one study performed on a community college introductory psychology class population found that students who completed reading focus worksheets AND received specific extensive timely feedback on their assignments performed better on the midterm and final examinations than their counterparts, and were less likely to drop out of the class (Ryan, 2006). Unfortunately, the same reading worksheet returned without extensive feedback did not produce that same high level of academic performance, nor did regular reading quizzes in the same population. Both of these reading compliance measures were, however, associated with a drop in student retention; the quizzed group being most likely to drop before the midterm.

In an informal study conducted by one of my Northern Virginia Community College colleagues at Manassas campus, 28% of economic students (of 43 students) reported that they had not read any of the assigned textbook reading (Bhadra, unpublished data). Another 28% of those students indicated they read less than 25% of the assigned readings. Only 14% indicated that they read 90-100% of the textbook readings. A common complaint among these students was the lack of time to read the course textbook; several students indicated on the survey that they would read more of the textbook if they had more time. This complaint is frequently cited by students as a rationale for poor textbook coverage in this literature (McDougall, 1996).

It is possible that many community college students complain that they do not have enough time to read the textbook because they are juggling the roles of student, parent, and employee all at once. However, if students were able to access the textbook and download it in audio form to an MP3 device (or any personal computer), then they might be able to cover more textbook content because they could listen to the recordings during their commutes, at the gym, and many other places that MP3 players are found. Having textbook material in an additional modality (auditory as well as visual) should also increase elaboration strategies that are good for memory retention (Myers, 2006) and meet the needs of persons with an auditory learning style, enabling higher academic achievement (Dunn, et. al., 1995). Thus, it is possible that increasing the portability of the textbook might increase both textbook coverage and content mastery.

Unfortunately, due to legal issues involved with creating audio recordings of a copyrighted book, I was dependent upon Worth Publishers to provide me with audio recordings of the textbook material. Days before I was scheduled to begin the experiment in my classes, I was made aware that instead of full chapter audio recordings, Worth Publishers would only be able to give me the section summaries printed after each major concept section in the textbook. Though these section summaries do not substitute for reading the whole chapter, they are part of each of the chapter readings. Therefore, the MP3 verbatim section summaries do increase portability of part of the assigned readings, and listening to the audio recordings could substitute for reading that part of the chapter and still provide the student with coverage of that part of the textbook.

My hypotheses are that students who have access to textbook section summaries in MP3 form will cover more of the textbook material and show greater mastery of text material than students who only have the text in its traditional form.

Method

Participants

Participants were 84 Northern Virginia community college students enrolled in four of my Introduction to Psychology II classes at the Loudoun or Reston campus¹. The smallest class had 15 students, whilst the largest class had 35 students. Thus, the number of students distributed in each condition were not equal. Fully 60.2% (56) of participants ended up in the experimental condition. Participants ranged in ages from 17-51 ($M = 21.87$). 66.7% of the population was female. Slightly over half of them identified themselves as Caucasian (54.8%). The next largest racial minorities were Hispanic (17.2%) and Asians (16.1%). 5.4% identified themselves as African American, whilst the remainder of participants either refused to report race or indicated a mixed-racial heritage².

Twenty-eight percent of the participants indicated that English was not their first language. Only 5.4% indicated that this was their first semester at college. 65.6% indicated that they went immediately from high school to community college. 60.2% of participants reported that they had to take Introduction to Psychology II as part of their major program³.

Procedures

On the first day of the class, I explained the research study design to students in all four classes. I informed them that their participation was voluntary and that their personal information would be kept confidential. I stressed

that participation in the surveys and use of the MP3 recordings would have no affect on student grades. Students were then given the opportunity to decline participation. They were also informed that they could withdraw their participation in the study at anytime during the semester at no detriment to their course grade. None chose to do so either on the first day of class or at any other point in the semester.

In order to maintain student confidentiality and still maintain the ability to match up student answers to survey questions and test bank scores, I assigned each student a number. This number was written on each survey and a master file of student names with their associated number was kept only as a written document and stored in a separate file away from both student grades and the surveys.

All classes were assigned Myers' (2006) *Psychology (8th Edition)* as a required text for the course. They were required to purchase the text on their own. Students in two of the four classes were randomly assigned (via coin flip) to get access to the MP3 recordings of the chapter summaries for Myer's textbook. The instruction and access codes were typed, printed, and distributed on the second day of class during the Spring 2009 semester accompanied by verbal and visual instructions by the instructor on how to access and download the section summaries. On that day, students in the experimental condition were urged to download at once all section summaries for the semester to their computer or portable MP3 device so that they could have access to the summaries during work commutes, job breaks, and anywhere else they might carry their MP3 device.

Students in all conditions were treated identically, except for the manipulation of the independent variable: access to MP3 audio readings of the textbook and a 10 minute instruction period during the second class on how to access and use the MP3 recordings.

¹ Originally, the dataset included 93 participants, but 9 of them missed tests throughout the semester and so were removed from all analyses. A chi-square analysis indicated no difference in attrition rates between conditions.

² Chi-Square tests revealed no significant differences in gender or race between conditions. A t-test revealed no reliable differences in age between conditions.

³ Chi-square tests revealed no significant differences between conditions in English as a first language, whether this was their first semester at a community college, or whether psychology was a course requirement. There was a significant difference between conditions of students who indicated that they went directly from high school to community college (more students with MP3 access said 'yes' to this item).

All students were required to purchase the textbook and assigned pages to read before coming to the class. Lectures, activities, tests, and assignments were identical for all classes. All four classes were graded on the same point system for the completion of identical assignments. At three points in the semester, all four classes took content exams, which included multiple-choice questions drawn from the test bank supplied with the Myer's textbook. Only student scores on the multiple test bank questions were used to assess the main dependent variable: mastery of textbook material.

In addition, all four classes answered identical surveys at the end of each test session as to how often they spent reading textbook material outside of class and how useful they think reading the textbook is for their individual performance in the class (see the Appendix for a copy of the survey). After reading through several surveys, I designed a set of codes for the two open-ended questions to capture the most frequent student responses to the prompt "I have read/covered about [blank] percent of the textbook reading assignments from the textbook so far for this course because..." and "I would read/cover more of the psychology textbook if..."

Materials

Students were required to purchase their own individual copies of the course textbook: *Psychology 8th Edition* (2006) by David G. Myers. In addition, students in the experimental group were provided with a free account to access the MP3 section summary recordings, compliments of Worth Publishers.

In addition, all four classes answered identical, in-class, one page surveys at the end of each test session as to how often they spent reading textbook material outside of class, and how useful they thought reading the textbook was for their individual performance in the class (see the Appendix for a copy of the survey). Three of these questions were taken from Bhadra's unpublished textbook read survey (unpublished data). The first question on every survey asked students to write in the percentage of textbook reading assignments they had covered in the course (through MP3 and/ or reading) and give an open ended explanation for that percentage. Next, students were asked to write in what factors would boost their textbook coverage. Then, students rated their agreement with several statements about their perceptions of the course, the textbook, and the importance of textbook reading. The first two surveys also asked students general demographic questions such as age, ethnicity, and gender.

Results

Test bank question mastery as a function of MP3 section summary access

Out of the 56 students in the experimental condition (those with access to the MP3 recordings), only 22 students reported ever downloading and listening to any of the section summaries. Among these 22 students there was wide variability in the amount of MP3 use before each test (2%- 100%).

Given that so few students in the experimental condition took advantage of their free MP3 textbook access, it is not surprising that there were no reliable differences between the experimental and control conditions. I also ran a set of independent sample t-tests comparing those who did access the MP3 records with those who did not (whether they were in the experimental or control condition). Between these groups there was a reliable difference in textbook coverage. Students who accessed and listened to the MP3 recordings reported covering more of the assigned readings in preparation for the test through reading the textbook and/or listening to section summaries ($M = 66.08\%$) than students who did not ($M = 49.58\%$); $t(76) = 2.91, p = .005$. However, there was no difference in mastery of text bank questions between these two groups. In fact, when students were split into three groups based on their percentage of textbook coverage before exams (high readers were students who reported 80% or more of textbook coverage, low readers were students who reported less than 21% of textbook coverage), there were no differences between high and low textbook covers on mastery of text bank questions. Furthermore, the variables of amount of textbook coverage and number of text bank questions answered correctly were not even significantly correlated with each other ($p = .948$).

Other findings

Generally, students agreed with the statement that “going over⁴ the course textbook material is important to my performance in class” ($M = 3.34$ on a scale of 1 = strongly disagree with the statement, 4 = strongly agree) and they agreed that “I perform better on Psy 202 tests when I spent time out of class going over textbook material” ($M = 3.2$), but on average, students in these four classes read only 54% on the required readings before an exam. The most frequently cited reason for not covering more of the textbook reading was lack of time (35.7%) though the average amount of time spent out of class on textbook coverage was 3.31 hours per week. Surprisingly, when asked on

⁴ In each class, I verbally defined the phrase “going over the course textbook” as reading the entire assigned pages or doing a combination of reading the text and listening to the audio recordings for the assigned chapters.

the survey whether they were happy with the amount of reading they had completed for the course, 73.8% replied “Yes.”

Lack of textbook coverage cannot be attributed to boredom with the subject material as students strongly agreed with the statement “I think that psychology is fun” (M = 3.66 on a scale of 1 = strongly disagree with the statement, 4 = strongly agree). Nor did the textbook garner significant distasteful student ratings. On average students reported neither agreement nor disagreement with the statement “I do NOT enjoy reading/covering the Psy 202 textbook” (M = 2.24) and they disagreed with a statement that they did not enjoy reading at all (M = 1.81). However, there was solid agreement among students with the statement “I wish I had better time management skills indicating that students may improve textbook coverage with time management instruction or increased textbook portability (M = 3.02; 1 = strongly disagree with the statement, 4 = strongly agree).

When asked what factors would increase their textbook coverage, the greatest amount of students reported that having more time would help (35.7%). 13.1% of students from the four classes said they would read more of the textbook if there was more motivation to do so (e.g. there were reading quizzes, they could not get most of what they needed for tests from lecture). Only a few students (4.8%) said they would read more in the textbook was in a different modality.

Discussion

This experiment confirmed earlier findings that many college students are not reading the required textbook material for their courses. Even though students in these classes enjoyed the subject and indicated that they would read the textbook if they had more time to do so, very few students took advantage of section summary MP3 files that would have helped them achieve greater textbook mastery. This may have been due to the fact that the MP3 recordings did not contain the full text, but rather just the end-of-the section summaries. It is likely that more students in the experimental condition would have utilized the MP3 recordings if the recordings had completely substituted for reading the chapter. However, my findings do suggest that merely changing the modality of textbook readings to provide greater portability is not enough to increase student readership. Perhaps increasing time management skills through specialized training would be a more effective way of increasing textbook coverage.

In addition, students continue to suggest that they would read more of the textbook if motivated through reading quizzes or other assessments. This indicates that the in- and out-of-class time cost for faculty to create and grade

such assignments may be warranted. However, care must be taken that the use of such assessments does not increase student drop out rates, which are already high in community college populations (over 50% nationally for community colleges) (Tietjen-Smith, et. al., 2009).

It is also possible that the wording of some of the questions in the survey affected the results found. Students were asked what percentage of the assigned readings they had “read/covered.” It is possible, though not likely, that some students understood the word “cover” in the first question on the survey to mean merely skimming through a chapter, whilst others believed that word only applied to reading and/or listening to every word of the assigned readings. These different interpretations could have obscured the study results.

Interestingly, students who did use the MP3 recordings to cover more of the textbook did not perform better on the test bank multiple choice questions than their cohorts. In addition, there was no relationship between amount of textbook coverage and performance on the textbook’s test bank multiple choice questions. This suggests that another reason why students are not reading the textbook is because they do not see a need to do so. Considerable evidence suggests that today’s students believe it is the instructor’s responsibility to teach all important course concepts within the lecture period and to teach students what is important from the readings (Clump & Doll, 2007). Perhaps instructors have increasingly ceded to these demands whilst constructing their lectures so that mere textbook coverage no longer predicts content mastery. Or perhaps textbook reading is not emphasized enough in college classrooms today.

Georgeana Stratton (Ph.D.) is an Assistant Professor of Psychology at NVCC – Loudoun with eleven years of experience teaching on a wide variety of psychology topics. She has a Ph.D. in social psychology from the University of Southern California, where she conducted numerous research projects on impression formation, stereotyping, and group membership. She also has several years of experience conducting field research in both the education and social science fields.

References

- Bhadra, L. J. (2007). Unpublished data from *Putting the Snap, Crackle, and Pop Back into Reading* Economics grant proposal.
- Burchfield, C. M., & Sappington, J. (2000). Compliance with required reading assignments. *Teaching of Psychology, 27*, 58-60.
- Clump, M. A. Bauer, H., & Bradley, C. (2004). The extent to which psychology students read textbooks: A multiple class analysis of reading across the psychology curriculum. *Journal of Instructional Psychology, 31*, 227-232.
- Clump, M. A., & Doll, J. (2007). Do the low levels of reading course material continue? An examination in a forensic psychology graduate program. *Journal of Instruction Psychology, 34*(4), 242-246.
- Dunn, R., Griggs, S. A., Olson, J., Beasley, M. (1995). A meta-analytic validation of the Dunn and Dunn model of learning-style preferences. *The Journal of Educational Research, 88*(6), 353-362.
- Elias, R. (2005). Students approaches to study in introductory accounting courses. *Journal of Education for Business, 80*(4), 194-199.
- Fitzpatrick, L., & McConnell, C. (2009). Student reading strategies and textbook use: An inquiry into economics and accounting courses. *Research in Higher Education Journal, 3*, 1-10.
- McDougall, D. (1996) How expectation of questioning method affects undergraduates' preparation for class. *The Journal of Experimental Education, 65*(1), 43-54.
- McDougall, D., & Corderio, P. (1992). College students' preparedness for lecture and discussion: Effects of random questioning expectations. *The Teacher Educator, 27*, 33-40.
- McDougall, D., & Cordeiro, P. (1993). Effects of random questioning expectations on community college students' preparedness for lecture and discussion. *Community College Journal of Research and Practice, 17*, 39-49.
- Myers, D. G. (2006). *Psychology (8th Edition)*. New York, New York: Worth Publishers.
- Phillips, B., & Phillips, F. (2007). Sink or swim: Students' textbook reading behaviors of introductory accounting students. *Issues in Accounting Education, 22*(1), 21-44.

-
-
- Podolefsky, N., & Finkelstein, N. (2006). The perceived value of college physics textbooks: Students and instructors may not see eye to eye. *The Physics Teacher*, 44, 338-342.
- Ryan, T. E. (2006). Motivating novice students to read their textbooks. *Journal of Instructional Psychology*, 33(2), 135-140.
- Sikorski, J. F., Rich, K., Saville, B. K., Buskist, W., Drogan, O., & Davis, S. F. (2002). Student use of introductory texts: Comparative survey findings from two universities. *Teaching of Psychology*, 29(4), 312-313.
- Terpstra, D. (1979). Order of presentation of oral and written information as determinants of student grades. *College Student Journal*, 13, 370-373.
- Tietjen-Smith, T., Masters, S., Smith, H., Waller, L. R. (2009). A national study of community college retention rates segmented by institutional degree of urbanization. *Academic Leadership: The Online Journal*, 7(1). Retrieved from http://www.academicleadership.org/student_research/611.shtml.

Appendix

Reading Across the Curriculum Survey

Please answer the following questions about your experience in Psyc 202 so far.

1. I have read/covered about _____ percent of the textbook reading assignments from the textbook so far for this course because _____

2. I spend about _____ hours per week reading/covering the textbook material outside of class.
3. I would read/cover more of the psychology textbook if _____

Put an 'X' in the box that indicates your agreement with the following statements:

	Strongly Disagree	Disagree	Agree	Strongly Agree
I think that going over the course textbook material is important to my performance in class.	1	2	3	4
I feel that I perform better on Psy 202 tests when I spend time out of class going over textbook material.	1	2	3	4
I feel that it is NOT important to read the course textbook to perform well on Psy 202 tests.	1	2	3	4
It is important that I read/cover textbook material outside of class so that I fully understand psychology concepts.	1	2	3	4
I think that psychology is fun.	1	2	3	4
I do NOT enjoy reading/covering the Psy 202 textbook.	1	2	3	4
I do NOT enjoy reading at all.	1	2	3	4
I wish I had better time management skills.	1	2	3	4

Please answer the following questions about yourself by placing an ‘X’ in the appropriate box:

	Yes	No
I went directly from high school to community college.	1	2
I have to take this specific class for my major.	1	2
English is my first language.	1	2
This is my first semester at community college.	1	2

What is your gender? _____ What is your age? _____

What is your racial background? _____

Have you used the MP3 access for the textbook? (circle one) Yes No

If so, estimate how many modules you have downloaded and started listening to. _____