

Running head: TRADITIONAL AND NON-TRADITIONAL AGED STUDENTS

Excerpt from:

Academic Performance and Study Behaviors of
Traditional and Non-traditional Aged College Students

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Abstract

In Study 1, 61 traditional (T) and 13 non-traditional (NT) (older than 24) students were compared on their academic success using GPA. To determine the most effective component(s)^{*} of studying, both groups recorded (for one month) the amount of time spent, the perceived amount learned, and number of times of study for each of a set of predetermined study behaviors. These variables were then correlated with the participants' GPAs. Results showed that NT students attained significantly higher GPAs than traditional students did, and that perceived amount learned, rather than the amount of study or number of times of study, was more often correlated with GPA.

In Study 2, 31 T and 30 NT students participated in the same study with some slight modifications. In addition to the previously mentioned variables, these students also recorded the perceived degree of effort exerted on each study behavior. Study 2 demonstrated the same GPA difference between T and NT students. Various components of study were correlated with GPA, but no consistent theme emerged. Both studies were also combined and analyzed. The same difference in GPA arose between T and NT students, and time spent studying emerged as an important variable related to GPA. In all three analyses, age was positively correlated with GPA.

^{*} "Study components" refer to time spent, amount learned, effort exerted, and number of study sessions for each study habit/behavior. Furthermore, "habit" and "behavior" are used interchangeably.

*Academic Performance and Study Behaviors of
Traditional and Non-traditional Aged College Students*

Older students are attending higher education in greater numbers than ever before. The attendance of students 35 years old and older rose by 83% from 1982 to 1994 (Hussar, 1995). This number is projected to increase another 11% in 2005. In 1997, the National Center for Education Statistics (NCES) estimated that approximately 36% of college students were age 25 or older. Since this age group is steadily growing, it is necessary to examine how these students perform in these settings. But few large studies have thoroughly examined or exclusively focused on the relationship between student age and performance. Research that clarifies any possible differences between traditional (T) and non-traditional (NT) students in post-secondary institutions will be especially useful to these students and the institutions they attend. As Tomporowski (2003) noted:

Optimal learning environments are characterized by instructional interventions that match, as closely as possible, the information-processing characteristics of the learner to the processing demands engendered by the task. . . . it is recognized that developing efficient educational programs for older adults *requires being sensitive to individual differences in learners' cognitive capabilities* . . . (p. 464, emphasis added)

Similarly, Corbin (1986) noted that “if such relationships did exist [between age and performance], a better understanding of them could lead to improved outcomes for adult college students” (p. 1981). First, however, we must establish whether there are differences in academic success between T and NT students. If a difference does exist, an examination of the differences in *how* T and NT students study might explain the difference.

Corbin (1986) examined the relationship between age and performance as well as other variables among adult college students. During the course of two years, he found no significant relationship between age or sex and performance or attitude. He warned that these results could not necessarily be extrapolated to other populations because of the limitations of his sample since his study examined the performance of adults only in computer literacy courses.

Helms (1991) investigated the relationships between age, commitment (to work, study, and home), and career maturity between 281 T and NT students. He found that “older students tend to adjust better to college demands” (p. 2412). In addition, Sadler-Smith (1996) indicated that mature students (23 and older) used a “deeper approach,” as identified by the *Revised Approaches to Studying Inventory (RASI)*, and that they were more likely to cope with stress more effectively than were less mature students (younger than 23). On the other hand, the deeper approach did not significantly increase or decrease older students’ academic performance, as predicted by the *RASI* (The Revised Approaches to Studying Inventory, *RASI*, is an inventory that predicts academic performance). As noted by the author, “the deeper approach did not confer any advantage in terms of superior academic performance on the part of mature students [23 years old and older]” (p. 376). Similarly, Justice and Dornan (2001), while examining metacognitive differences, did not find significant differences in course performance due to age or gender. Wheeler (2001) also found no difference between T and NT students.

A study of first-year college women between the ages of 17 and 52 also did not find significant differences between the self-reported study strategies, as reported by the Problem-Solving Inventory (PSI) and the Learning and Study Strategies Inventory (LASSI), and academic achievement (Franciosi, 1997). The author cautioned that the study was conducted at a college that implemented an unusual grading method—students’ grades were determined by an academic

status committee at the end of the semester. She advised that the study needed to be replicated at a college that uses a standard grading method. Among the significant findings was a positive correlation of age with effort (correlation coefficient not reported).

Eberling (1998) investigated the relationship between study strategies, attitude, and GPA, but she also included an examination of the effectiveness of a study strategies course. She found a positive relationship between age and pretest scores of study skills, as measured on a study habits inventory. The author interpreted this finding as indicating that the effectiveness of study strategies increased with age, since older students began the study with better study skills than younger students did. No other significant relationship between the variables was found; however, the sample size may have been far too small to detect relationships ($N = 10$).

Wheeler (2001) categorized students into four groups. NT students were considered those who: a) were accepted to the school based on qualifications other than grades, b) were 25 years old and older, c) had prior experience in the field, or d) were employed during their schooling. Each category was analyzed with its compliment. Interestingly, Wheeler found no significant differences between the learning success and outcomes of students younger than 25 years old and students 25 years old and over, nor did he find differences between any of the other groups.

With similar rigor, Lammers, Onwuegbuzie, and Slate (2001) studied the interrelation of academic success with gender, class, age, study habits, and employment of college students. They found that older students spent more time studying and they received higher “study habits scores.” The results, however, did not demonstrate a strong relationship between age and GPA ($r = .10$). A significant relationship was found between age and the number of hours of study; that is, older students spent more time studying. Age was also positively correlated with the researchers’ study habits scores. Additionally, a negative relationship was found between GPA

and the number of hours spent working[†] at a job each week, indicating that students who work more receive lower GPAs and vice versa.

Eppler and Harju (1997) also found no significant difference between T and NT students. NT students generally pursued learning goals rather than performance goals. NT students' GPAs, however, were not significantly higher than the GPAs of T students, although the pursuit of learning goals were strongly correlated with GPA overall. The authors attribute this quandary to the fact that NT students tended to spend more time working at a job than do T students (about three times as much, according to the authors). Extra-curricular obligations may explain why NT students do not receive higher GPAs even though they may exhibit more effort (Franciosi, 1997) and better study skills (Eberling, 1998; Lammers et al., 2001).

Conversely, Carney-Crompton and Tan (2002) found significant differences in academic performance between T and NT female students (ages 18 to 22 and 35 to 44, respectively). In this study, NT students academically outperformed T students. These researchers also measured student depression, anxiety, and personal supports systems. No differences were found in depression or anxiety. NT students were found to have smaller support systems, but were as satisfied with these structures as T students were. Thus, in this study, it was difficult to determine how or why the NT female students performed significantly better than T students did.

Schlossberg, Lynch, and Chickering (1989) found that “many older adults *think* that they lack the academic skills necessary to maintain the same level of academic achievement as younger students” (as cited in Lammers et al., 2001, p. 79, emphasis added). Thus, older students may have the opinion that they are at a disadvantage when compared to their younger counterparts. These perceptions may be linked to stereotypes about aging or a lack of awareness

[†] In this paper, “working” always refers to time spent being paid for labor. “Working” never refers to time spent studying.

of research findings. In addition, Corbin (1986) found a significant correlation between attitude and performance, demonstrating that attitude may have a significant impact on performance. Further research is necessary, however, to determine if it is a causal relationship. In any case, the performance of older students may be impeded by a pessimistic attitude toward the effect of age on learning. Still, NT students may exert more effort (Franciosi, 1997) and may have better study skills (Eberling, 1998; Lammers et. al., 2001); therefore, NT students may be able to excel academically if the attitude or lack of awareness was changed. Or perhaps NT students are accurate in their assessment of their ability to learn, compensating for this disadvantage by studying more (Lammers et al., 2001) and exerting more effort (Franciosi, 1997).

Essentially, the research above agrees that NT students seem to have better study skills and may exert a higher degree of effort, but they do not perform better or worse than T students perform. Do NT students really study differently than do T students, even if they have comparable rates of success? If NT students do exert more effort or study differently, why do they not perform better than T students? As Lammers et al. (2001) noted, “The role of age in the acquisition of study skills warrants further investigation” (p. 79). Additionally, regardless of student status, what study habits increase academic performance? If any group of students is significantly different from the rest, how do they engage in study differently from other students?

Lammers et al. (2001) found two main conclusions in the literature concerning study habits. First, effective study habits were generally positively related with GPA. This relationship may have accounted for up to 15% of the variance in GPA. Students with higher GPAs tended to engage in a wider variety of study habits, including recopying lecture notes, completing homework on time, identifying important factors while reading, seeking help from instructors, and generally taking notes. Second, GPA did not differ significantly across classifications in

gender or academic status. They also found that students with higher GPAs tended to engage in a wide variety of study habits. The age range of the students in this study was 17 to 49 years.

Many studies have demonstrated that time spent studying is positively correlated with academic success (usually GPA), although some studies have shown that this correlation is small (Lahmers & Zulauf, 2000). Other studies have shown that the effects of managing time, rather than the amount, may produce the result. Lahmers and Zulauf (2000) conducted a rigorous examination of time allocation. They found a small regression coefficient of time spent studying and GPA, increasing GPA by 0.025 for every additional hour of study time per week. This means that a student could study for 40 additional hours in a week, increasing his or her *quarter* GPA by 1 point (see Lahmers & Zulauf, 2000, p. 552). Furthermore, small correlations between time spent studying and academic success were found in the literature by Lahmers & Zulauf (2000), supporting their findings and the notion that other factors of studying might be more important.

In the present studies, age, performance, and study behaviors were examined in order to increase our understanding of the relationships among these variables. Do T and NT students differ significantly in their academic success? Which components of studying are most strongly related to academic success in either group? Since their study, as well as other studies, may be limited in their ability to generalize, Lahmers and Zulauf (2000) suggested, “Additional studies across a wide variety of majors and institutions are needed to gain a better, more robust understanding of the relationships between use of time and academic performance” (p. 553). They also suggested that, “Further investigation of this topic by conducting a time diary survey over the academic year would be useful” because, according to some studies, the time of the academic term might be important (p. 553). Additionally, they also asked, “What associations

exist among class attendance, amount of studying, learning style, and academic performance?” (p. 554).

The present studies quantified the relationships among class attendance, amount of studying, perceived amount learned from studying, perceived amount of effort, the number of study sessions, and academic performance. Additionally, both studies were conducted at different times during the semester for three to four weeks. The two studies also introduced a wider variety of participants, and both contribute to the variety of institutions represented in the field.

During the present studies, T and NT students recorded study behaviors in a logbook over a specific period. Study 1 lasted for four weeks but did not include weekends (20 days), and Study 2 lasted for three weeks but included weekends (21 days). The logbooks included 14 specific study habits including reading textbooks, taking notes in class, and completing assignments (see Appendix A). The study habits were chosen based on similarity to other studies, with suggestions provided by other researchers, and in an attempt to include as many observable study habits as possible.

Participants charted not only what behaviors they engaged in but also the length of time spent on each behavior (in minutes), the perceived amount learned from the behavior, the perceived amount of effort exerted into the behavior (in Study 2), and the number of times per day that the behavior was performed. As noted by Lahmers & Zulauf, “eliciting from students the amount of time they spend on academics captures primarily quantitative but also to some degree qualitative aspects of their commitment to academics” (p. 552). The perceived amount learned and amount of effort exerted were measured because some studies have suggested that

these variables relate to GPA (e.g. Franciosi, 1997). The number of times the behavior was used per day was measured in order to get a sense of how much students “cram” or manage their time.

Two hypotheses were formed based on previous research. First, it was not expected that T and NT students would differ significantly in academic performance. Second, students who invested more time, used a wider variety of study habits, rated themselves higher on the amount learned from studying and on the amount of effort exerted, and engaged in study more often were hypothesized to be more academically successful, regardless of age. Based on previous research, it was also expected that NT students would study differently than T students, but as mentioned above, would not necessarily attain higher GPAs.

Although previous data do not clearly indicate whether time spent studying aids academic performance, it is assumed that more time spent or effort expended on each study habit would improve academic performance (GPA), especially if correlated with higher degrees of perceived learning. If NT students in fact spend more time studying (Lammers et al., 2001), exert more effort (Franciosi, 1997), or have better study skills than those of T students (Eberling, 1998; Lammers et. al., 2001), based on the previous hypothesis, we would expect NT students to receive higher GPAs. Alternatively, the difference may be in the quality of their approach to studying (Sadler-Smith, 1996). However, NT students may have many other factors that influence their GPAs, such as the amount of time spent working at a job (assessed in Study 2), especially since Lammers et al. (2001) discovered a negative relationship between the number of work hours and GPA.

The present study also examined the correlations between the amount learned from each study behavior (as perceived by the participant) and academic performance (GPA) as well as the

number of times that the behavior was used (during an average week) and academic performance.

Study 1

Method

Participants

Seventy-four students (61 T and 13 NT) were recruited from various psychology and biology courses at the University of Wisconsin-Whitewater, as well as from posters hung in university buildings. These students participated for extra credit or participated for inclusion in a raffle. The raffle consisted of three prizes of \$50 and two of \$25.

NT students were defined as students age 24 and older who also had a discontinuous education, i.e., with a gap larger than a year between high school and a post-secondary institution or two post-secondary institutions. T students' ages ranged from 18 to 25 and NT students' ages ranged from 24 to 52. The overlap occurred because students older than 24 can still be identified as T if they have a continuous education since high school. The study included 43 female and 18 male T students and 10 female and 3 male NT students.

Materials

The logbook included a list of study habits, chosen to reflect the study habits involved in a typical lecture course, derived from discussions with professors and students about the type of study habits they typically employ. The logbook was designed for use in only one course. Students marked the specific study habit that they performed and recorded the number of minutes spent, the amount learned ("quality" rating), and the number of times per day.

The logbook included the following variables: class attendance; in-class note-taking; reading the textbook; taking notes on the textbook; reading classroom notes; rewriting classroom

notes; preparing homework assignments; writing papers; conducting research; discussing course material with others (professors, other students, tutors); studying with other resources such as CD's or software, internet sites, other publications, and taped lectures; and unidentified/other study habits (see Appendix A). Students marked each day whether they attended class, and if so, whether they took notes in class. Weekends were not included in the logbook in order to decrease the commitment level required of the participants to attract more participants.

For each study habit, participants recorded the amount they believed they learned from the material covered during the study habit. These “quality” ratings were defined on each logbook page as (with emphases): 1) I learned *little* or *none* of the material, 2) I learned *less than half* of the material, 3) I learned *about half* of the material, 4) I learned *more than half* of the material, and 5) I learned *nearly all* of the material. For instance, if a student discussed the previous lecture with a professor and she or he understood about half of what was discussed, she or he would mark a 3 under the “quality” section for “discussions with professor.” Also included was an area to record the per-day frequency of each study habit, i.e. the number of study sessions per study habit for each day.

Procedure

Participants began the study in a university classroom by completing the necessary IRB forms, which included an explanation of the study and a short demographic survey. The survey included questions regarding the number of years of education that they had received, the participants' current academic status (e.g. sophomore), gender, and age. Participants then received their logbooks and the instructions on how to choose a class: Participants were asked to choose one 200- or 300-level, three-credit course in which they were currently enrolled. This definition was used in an attempt to avoid laboratory courses, which may have different types of

study habits. They were also instructed how to record study habits appropriately and how to interpret the “quality” ratings. Simultaneously, they were instructed when and how to use the *No Studying Today* checkbox, the attendance box, and the *number of times per day* box. Questions concerning study behaviors were answered, and the participants were encouraged to contact the researcher if any questions arose.

Participants then charted their study behaviors for each day for four weeks, not including weekends. At the end of a month, participants were contacted by phone to set up meeting times for submitting logbooks. At these meetings, students were asked to submit summer contact information for collecting the semester’s GPA. The GPAs of the semester of the study were collected from each student at the beginning of summer once grades were released.

Semester GPA was used instead of cumulative GPA because past failures or successes, as reflected best in cumulative GPA, were not the focus of the study. *Current performance*, rather, was believed to be measured more sensitively in semester GPA. Semester GPA was used because it is a more stable measure of overall academic performance during this period. Since grades with the course are not given at the same time during the semester and overall course grades are given at the end of the semester, these data were not used due to the difficulty in obtaining these data and time constraints (the project had to be finished *before* graduation). Additionally, the specific course grade may be affected by extraneous factors that would not reflect the students’ abilities.

The logbooks were analyzed by converting the total minutes spent and number of study sessions for each study habit to a per-week average. Other variables, such as gender, academic status (e.g. junior), number of years of education, percent attendance, in-class note taking, and number of weekly study days were also analyzed. For each logbook, total time per study habit

was computed in such a way as to find a weekly average. Since there were four weeks in the study, each weekly average was computed by dividing the total for habit by four. The number of study sessions for each study habit (i.e. the per-day frequency of each study habit) was also averaged to obtain a weekly average. Similarly, the “quality” ratings were simply averaged. All of these numbers were then entered into a database with the descriptive statistics from the other logbooks.

Study 2

Considering the impact of the design limitations in Study 1, it is necessary to modify and replicate Study 1 in order to remedy these problems. For Study 2, we attempted to recruit a larger and more representative sample of NT students. Study 2 was conducted over four weeks, including weekends. Participants were offered the chance to use an online version of the logbook. However, due to the possibility that some students may not have access to the internet or to a computer, the hardcopy version will still be offered. The “quality” rating, as mentioned earlier, will be changed to percentages. Minor details in the format of the logbook will change, as well as a small number of the phrases used to describe certain variables. Finally, participants will be asked for the previous semester’s GPA instead of the current semester’s GPA (see below).

Method

Participants

The definition of NT students remains as in Study 1. Since too few NT students participated in Study 1, additional recruitment methods were required in order to increase this number. Two searches were conducted using the registrar’s database at the UW-Whitewater. The first search identified all students 25 years old and older, and the second identified a random sample of 300 male and 300 female students between and including the ages of 18 and 22.

Initially, all T and NT students were emailed with information about the study. Then random samples of 60 students were selected from the male and female T and NT data sets, for a total random sample size of 240 students. The students in the random sample were called, and the caller, following a script, informed each student about the study and asked if (s)he would like to participate. Students were also recruited from various psychology, biology, sociology, and general education courses at the University of Wisconsin-Whitewater. All students were offered extra credit for participation, based on their instructor's extra credit policies.

Sixty-one students (31 T and 30 NT) were recruited using the methods above. T students' ages ranged from 18 to 24 and NT students' ages ranged from 25 to 57. There were 10 male and 21 female T students, and 10 male and 20 female NT students.

Materials

The logbook changed slightly. The phrases "I attended" and "I took notes" were taken out of and placed above the table, and rephrased as "Did you attend class today?" and "Did you take notes in class?" respectively. The phrase "taped lectures" was changed to "recorded lectures" because of the availability of other recording means.

The "quality" ratings, as mentioned previously, were changed to "Percent Learned." "Percent Learned" is the amount of material that the participant believed he or she learned from the particular study behavior in question (see Appendix B). For instance, if a student talked to the professor about the refraction of light and the student felt that she or he only learned half of what was discussed, the student would write 50% in the appropriate box on the logbook. Of course, subjective self-report data of the like are prone to problems, including the student's poor memory, poor understanding of the requirements, or simply inaccurate estimation; however, the

study, due to its scope, would have been impossible if objective measures of the amount of material learned were used for every study behavior.

Additionally, effort ratings were included. Effort ratings were defined as the perceived amount of effort the student exerted in doing the study behavior. The rating was on a five-point scale, with the numbers defined as: 1) Little or no effort, 2) Low effort, 3) Moderate effort, 4) High effort, and 5) Very high effort. The logbook also included an area to report the amount of time spent working at a job, if the student worked at all.

The logbook was also available online. The online version asked the students for their student identification number, the date of the day that was being recorded, and the name of the class they had chosen. In appearance, the online version was essentially the same as the hardcopy. The online version, however, provided some useful benefits (see below).

Furthermore, a detailed set of instructions accompanied each logbook (see Appendix B). In Study 1, the directions for the use of the logbook were communicated verbally; however, due to a high degree of recording error in the logbooks, the instructions for Study 2 were included with the logbook for future reference. Finally, Study 1 lasted twenty days (four weeks) without weekends, and Study 2 lasted twenty-one days (three weeks) including weekends.

Procedure

The participants were briefed in the use of the logbook in a similar manner as was done in Study 1. Participants were asked to read the consent form and the instructions (Appendix B), and to fill out the demographic form that followed. The demographic form asked the participants for their age, gender, grade level, number of years in college, and the previous semester's GPA. Then participants were asked whether they wanted to use the hardcopy version or the online version, and they were shown how to use the version they chose. Participants completing the

online version were asked for their student identification number and were told it was used for identification purposes only. The verbal instructions were the same as those on the instructions (see Appendix B), and the definitions of “work” and “other study habit” were stressed.

For three weeks, the progress of each participant was monitored. For those participating in the online version, reminder emails were sent when the participant missed a day or incorrectly used the logbook. The online version also reported the date of submission for each logbook entry. In order to ensure that participants were not logging their study behaviors in advance, discrepancies between the reported date and the submission date was also monitored.

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Appendix A - Logbooks

Study 1 Logbook

Day	Date:			
<i>Quality = 1) I learned little or none of the material 2) I learned less than half of the material 3) I learned about half of the material 4) I learned more than half of the material 5) I learned nearly all of the material</i>				
Study Behavior	✓ (check)	Total time spent (minutes)	Quality (1 to 5; see above)	# of times per day
No Studying Today		X	X	X
On Class Days				
I attended	Y N NA	X	X	X
I took notes	Y N NA	X	X	X
Textbook				
reading			1 2 3 4 5	
taking notes			1 2 3 4 5	
Class notes				
reading			1 2 3 4 5	
rewriting			1 2 3 4 5	
Homework				
assignment(s)			1 2 3 4 5	
writing paper(s)			1 2 3 4 5	
research			1 2 3 4 5	
Discussion				
with professor			1 2 3 4 5	
with student(s)			1 2 3 4 5	
with tutor/other			1 2 3 4 5	
Other Resources				
CD or software			1 2 3 4 5	
Internet site			1 2 3 4 5	
other publications			1 2 3 4 5	
taped lectures			1 2 3 4 5	
Other :			1 2 3 4 5	

Study 2 Logbook

Day:	Date:				
Did you attend class today? Y N NA		Did you take notes in class? Y N NA			
Behavior	✓ (check)	Total time (minutes)	Percent Learned (see definitions)	Degree of Effort (see definitions)	# of times today
I did not study today					
I worked today					
Textbook					
reading				1 2 3 4 5	
taking notes				1 2 3 4 5	
Class notes					
reading				1 2 3 4 5	
rewriting				1 2 3 4 5	
Homework					
assignment(s)				1 2 3 4 5	
writing paper(s)				1 2 3 4 5	
research				1 2 3 4 5	
Discussion					
with professor				1 2 3 4 5	
with student(s)				1 2 3 4 5	
with tutor/other				1 2 3 4 5	
Other Resources					
CD or software				1 2 3 4 5	
Internet site				1 2 3 4 5	
other publications				1 2 3 4 5	
recorded lectures				1 2 3 4 5	
Other :				1 2 3 4 5	

Appendix B - Instructions and Definitions

Instructions to Participants

All Students:

- Choose one 200 or 300 level, 3 credit course for the logbook. Please do not choose an online or laboratory course.
- Record the study habits for each day on the same day. Try not to forget!

Hardcopy Logbook Instructions:

- Write your name on the cover.
- Write the name of the class that you are using for the logbook on the cover. For the class name, write the name of the department followed by the class number (e.g. Math 143 or English 102).
- Circle the days that the class meets.
- Each day, enter the day and the date at the top of the section.
- Circle the answers to the two questions just below the day and date. For “Did you attend class today?” Yes = I attended, No = I did not attend (but class was held), NA = class did not meet today. For “Did you take notes in class?” Yes = I took notes, No = I did not take notes (but I went to class), NA = I did not have or go to class, so I could not take notes.
- If you did not study, check the box labeled “I did not study today.” Do not check or fill in any details for any study habits (work is okay).
- If you worked, check the box labeled “I worked today.” See Definitions for “work.” Record the number of minutes that you worked.

Online Logbook Instructions:

- Go to:
<webpage address>
- Type your student identification number in the box provided.
- Each day, enter the 4 digit date (month/day) in the box provided.
- Answer the drop-down box questions. If class was not held, select NA for “Did you take notes in class?”
- Type the name of the course that you are using for the logbook. Enter the same class name every day. For the class name, type the name of the department followed by the class number (e.g. Math 143 or English 102).
- If you did not study, check the box labeled “I did not study today.” Do not check or fill in details for any study habits (work is okay).
- If you worked, check the box labeled “I worked today.” See Definitions for “work.” Record the number of minutes that you worked.
- The online version records the date and time of submission. If you miss a day, fill in the logbook for the missed day, but make sure to enter the correct date. Continue to fill in the logbook for the new day as well.

For each study habit:

- Check the box next to the study habit.
- Fill in the amount of time you spent on the study habit.
- Estimate the percent learned and write the percent in the box on the same line as the study habit (e.g. 20%, 50%, 75%). Please see Definitions.
- Estimate the degree of effort that you put into each study habit and select the appropriate number. This is on a scale from 1 to 5, where 1 is low effort and 5 is high effort. Please see Definitions.
- Write the number of times that the study habit was used for that day. Please write these as whole numbers (e.g. 1, 2, 3).
- For “Other” study habits, please write a word or two describing the behavior. See below.
- When in doubt, estimate! **Some of the study habits overlap**. Please estimate how much time you spent on each separately. Contact me with any questions.

Definitions

Time	- Please estimate the amount of time you spent on the study habits. Please enter WHOLE numbers. Write the time in minutes .
Percent learned	- How much did you learn from the study habit in question? For example, let's say you read a chapter in a textbook. You felt that you learned about half of the material covered in the study habit. Then you would write 50% in the row for textbook reading and the column for percent learned. If you learned 1/4th of the material, you would write 25%. If you learned 2/3 of the material, you would write 66%, and so on. Please enter WHOLE numbers. Give your best estimate.
Degree of Effort	- How much effort did you put into the study habit? How much mental exertion did you put into the study habit? How much work did you do to finish the task? Rate your effort on a five point scale, shown below. Give your best estimate. (1)-Little or no effort (2)-Low effort (3)-Moderate effort (4)-High effort (5)-Very high effort
Work	- Work includes any paid job/career and/or volunteer work. Basically, any type of paid or unpaid labor for which you do NOT receive credit. Internships for credit do not qualify.
Textbook	- Did you read the textbook? Did you take notes on the textbook? The textbook is any book that is on the syllabus or a book that is assigned by the professor for the class. Some of the study habits overlap. If you took notes while reading the textbook, estimate how much time you spent on each activity separately.
Class Notes	- Did you read lecture notes? Did you rewrite lecture notes? Class notes are any notes that you took during lecture or other classroom activities. Some of the study habits overlap. If you rewrote lecture notes while reading them, estimate how much time you spent on each activity separately.
Homework	- Did you work on any assignments? Did you spend time writing a paper? Did you conduct any research? See below.
	Assignments - This is anything that is assigned by the teacher in his or her syllabus that does not fit into any other category. This includes answering textbook questions or filling out handouts.
	Papers - This includes long essays (more than a page per answer) and papers.
	Research - This includes looking up books and articles online and in the library, as well as finding other resources. Research is identifying and locating various sources of information, or information gathering. This does not include writing papers, reading books or articles, or studying for tests. Please see Internet and Other publications below.
Discussion	- Did you discuss class material with a professor, other students, or a tutor? Usually these discussions would be for a substantial reason concerning relevant class material. Asking your professor when an assignment is due <i>is not</i> a study habit. Asking your professor for a definition of a term or clarification of other class material <i>is</i> a study habit. Gossiping is not a study habit.
Other Resources	- Did you use any other type of study method? Did you use a CD or other software? Did you use the internet? Did you read any other type of publication (e.g. journal articles)? Did you listen to a taped lecture? See below.
	CD or Software - Basically, software other than an internet browser that helps you to learn a skill or concept. For instance, you might use language software to help learn Spanish.
	Internet - If you used the internet for <i>library research</i> (to find articles or other scholarly resources), please mark it above in Research . If you used it to find webpages or other online material, mark it here. If you used the internet to help you learn a skill or idea, mark it here as well. Think of internet usage as an alternative to reading your textbook or using other class material.
	Other Publications - This includes journal articles and books not directly assigned by the professor. It also includes any printed media not covered elsewhere.
	Recorded Lectures - Listening to recorded lectures only. Format does not matter.

Remember: When in doubt, estimate! **Some of the study habits overlap.**
Please estimate how much time you spent on each separately.

Appendix C – List of Variables

List of Study Habit Variables:

Percent of class attendance	Number of times in discussions with professors
Percent of in-class note taking	Time spent in discussions with other student(s)
Number of days that a student studied (number of “study days”)	Amount learned from discussions with other student(s)
Number of days that a student worked (at a job, career, etc.)	Effort exerted in discussions with other student(s)
Time spent at work	Number of times in discussions with other student(s)
Time spent reading the textbook	Time spent in discussions with tutor/other
Amount learned from reading the textbook	Amount learned from discussions with tutor/other
Effort exerted in reading the textbook	Effort exerted in discussions with tutor/other
Number of times reading the textbook	Number of times in discussions with tutor/other
Time spent taking notes on the textbook	Time spent using a CD or software
Amount learned from taking notes on the textbook	Amount learned from using a CD or software
Effort exerted in taking notes on the textbook	Effort exerted in using a CD or software
Number of times taking notes on the textbook	Number of times using a CD or software
Time spent reading in-class notes	Time spent using the internet
Amount learned from reading in-class notes	Amount learned from using the internet
Effort exerted in reading in-class notes	Effort exerted in using the internet
Number of times reading in-class notes	Number of times using the internet
Time spent rewriting in-class notes	Time spent reading other publications
Amount learned from rewriting in-class notes	Amount learned from reading other publications
Effort exerted in rewriting in-class notes	Effort exerted in reading other publications
Number of times rewriting in-class notes	Number of times reading other publications
Time spent completing assignments	Time spent listening to recorded lectures
Amount learned from completing assignments	Amount learned from listening to recorded lectures
Effort exerted in completing assignments	Effort exerted in listening to recorded lectures
Number of times completing assignments	Number of times listening to recorded lectures
Time spent writing papers	Time spent doing “other” study habits
Amount learned from writing papers	Amount learned from doing “other” study habits
Effort exerted in writing papers	Effort exerted in doing “other” study habits
Number of times writing papers	Number of times doing “other” study habits
Time spent conducting research	“Variety” of study habits – number of different study habits used
Amount learned from conducting research	Total time spent studying
Effort exerted in conducting research	Total amount learned while studying
Number of times conducting research	Total effort exerted while studying
Time spent in discussions with professors	Total number of study sessions
Amount learned from discussions with professors	
Effort exerted in discussions with professors	

Demographic variables: Age, T/NT status, age group (18-21, 22-25, 26 and older), gender, college status (e.g. freshman), number of years at college, number of years of education total, and type of book (online and hardcopy).