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An Investigation of Student Study Behaviors in Post-Secondary Classes

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Abstract

The current study explored study skills utilized by students across post-secondary academic levels. Participants ranged from bachelors, masters, post-graduate to doctoral levels. One hundred and forty eight students from a private university in the Northeast completed a survey which assessed participants' self-reported frequency of use of textbook skills, note taking, memory, test preparation, concentration, and time management. Textbook skills, $p<.01$ and time management skills, $p<.05$ were found to be positively correlated with class level. The results indicated that more advanced students more frequently utilized time management and textbook skills; however students at all levels might benefit from direct instruction on other effective study skills. Implications for the study are discussed.

Keywords: Learning and Instruction, Post-Secondary Education, Student Populations Research, Study Skills

An Investigation of Student Study Behaviors in Post-Secondary Classes

Recent shifts in the United States economy have had a profound effect on employment trends and higher education. During the current economic downturn colleges and universities have seen an increase in enrollment (Callan, 2002). Whereas in the past a high school diploma was the minimum prerequisite for gainful employment, high school graduates are competing with college graduates for entry level positions. The current "Great Recession" (Rose, 2010) has led to an increased demand for "high skilled-high wage and low skilled-low wage" positions (Autor, 2010, p1). Those who fall squarely in the middle struggle to find employment with salaries that can sustain them.

According to Wise (2008), high school graduates are often evaluated by employers as unprepared for the job market. College graduates have traditionally outpaced high school graduates' total income earned over the course of their lifetime (Hill, Hoffman & Rex, 2005). For workers wanting to increase their lifetime earnings, a high school diploma may no longer be sufficient. Dent (2009) recommended that until the economy recovers, parents should "advise their children to leave college for a period, find a job or get an advanced degree" (p 317). In that sense a graduate degree may have become the baccalaureate degree of yesteryears.

At the graduate and undergraduate level the "rapid rise of online and for-profit educational experiences and the willingness of students to pay more for their education and student support services tailored to their lifestyles has colleges and universities scrambling to compete even within state borders" (Bruininks, Keeney & Thorp, 2010, p.116). The authors further state that to remain competitive, institutions must incorporate

innovative strategies that lead to success at the postgraduate level (Bruininks, et al., 2010).

As public and private colleges strive to remain solvent during the Great Recession, they must implement policies that support student recruitment and retention at the undergraduate and graduate levels (Callan, 2002; Kuh, 2009; Spanier, 2010). However with 42% of community college students and 20% of four year college students requiring remedial classes in the freshman year of college, this has become a daunting task (National Center for Education Statistics, 2004). While it is clear that the high school to college transition is greatly affected by inadequate academic preparation, there is little information about the academic preparedness and skill level of those in graduate programs. Relevant skills such as note taking, memory, test preparation, concentration, time management, and textbook reading might not have been mastered at the undergraduate level.

Student retention has been identified as an important strategy for the United States and higher education institutions to compete in the global economy (Bruininks, et. al., 2010; Spanier, 2010). Improving study behaviors at the undergraduate and graduate level is an important part of the retention process; however, improvement cannot be addressed without clear understanding of the trends in this area. Traditionally, undergraduate skill assessment has been the primary focus of research inquiry, although graduate students can also benefit from such measures. Moreover, institutions are beginning to recognize their role in retaining graduate students who might not have received adequate academic preparation during their undergraduate studies (ASHE- [Association for the Study of Higher Education]-ERIC Higher Education Report, 2003).

Students as well as the institutions where they are enrolled must be accountable for their educational success (Spanier, 2010). The purpose of this study was to investigate the relationship between the study behaviors students employ and level of post-secondary class in which they are enrolled. Students in undergraduate, masters, masters + (seeking a certificate (6^{th} year), or an endorsement (092, 105) for Intermediate Administration or Supervision, Department Chairperson, and doctoral classes were surveyed. The survey included sections on accessing information in the textbook(s), note taking, memory, test preparation, concentration, and time management (Congos, 1999). The results of this study are intended to assist colleges and universities and, most especially, their students thrive in the increasingly competitive global society.

Student Retention

Colleges have an ethical obligation to retain students (ASHE-ERIC, 2003, p. 8). Despite that responsibility, only 47% of African American students and 47% of Hispanic students, compared to 67% of White students and 72% of Asian students, complete college in six years (ASHE-ERIC, p. *vii*); and some leave when they discover that they lack skills (Heredia, 1992, p. 1). Scholarly research on retention is dominated by two theories, Vincent Tinto's Student Integration Model (1975) and Bean's Student Attrition Model (1980). The Student Integration Model (Tinto, 1975) suggests that five variables impact student retention: (1) a student's pre-entry attributes (prior schooling and family background); (2) goals and commitment (the student's individual aspirations in the institution); (3) experience at the institution (academics and faculty and peer interactions); (4) external commitments while at the institution; and (5) integration both academically and socially. Each of these factors aids the student in forming that initial

commitment to the entire collegiate experience. This commitment is dependent on the student's integration into the campus community, which in turn reinforces the commitment to education. Key to this argument is Tinto's suggestion that the fit between the student and the institution plays a key role in retention (Cabrera, Nora & Castaneda, 1993). Furthermore, "the degree of institutional commitment a student feels, and the subsequent persistence, is shaped by the congruence between student motivation and ability and the institution's academic and social characteristics" (Filkins, Kehoe, & McLaughlin, 2001, p.2).

The Student Attrition Model (Bean, 1980; Bean & Metzer, 1985) suggests that variables such as the student's high school experience, future educational goals, and the ability to pay for college affect how the student will integrate into the college community. Integration with the college community will in turn impact the student's personal attitude towards being a student and towards the school. This integration and the resulting attitude, combined with the variables mentioned, are likely determinants in retention. Furthermore, the Student Attrition Model notes that students' beliefs about their experiences in school affect their intention to stay and subsequent dedication to the educational experience, effectively merging internal and external factors into students' decisions (Bean, 1990). Bean's model follows Tinto's model in stressing the importance of integration into the student community. However, Bean's model is different in that it includes both environmental variables and student intentions, where Tinto does not. Recognizing the importance of factors outside of the University, Tinto (1993) adjusted his model to include them.

Building on the work of both theories, Rovai (2003) developed the Composite Persistence Model which examined factors related to retention both prior to and after admission to college. Characteristics prior to admission included such demographic variables as age, ethnicity, gender, intellectual development and academic preparation but also included skills level variables such as computer skills, time management, information literacy and reading and writing skills. After admission, retention is based on both internal factors including academic and social integration, study habits, advising, stress, satisfaction, and self esteem and external factors including finances, hours of employment, and family duties. This suggests that while institutions might work to increase student retention, many of the factors affecting the student's decision to withdraw lie outside the university's control (Rovai, 2003). For example, family dynamics, including the student's fiscal responsibilities to his or her parents and biological children, are routinely cited as a key factor in the decision to withdraw from school (see for example, Pidcock, Fischer, and Munsch, 2001; Rovai, 2003; Tinto, 1975).

Students' Preparedness and Study Skills

Theories abound for the reasons students succeed in higher education (ASHE-ERIC, 2003; Balduf, 2009; Kanesky & Keighley, 2003; Lei, Howard, & Cho, 2010; Linderholm, Cong, & Zhao, 2008; McNamara, 2010; Nonis & Hudson, 2010); but in general, two themes emerge: student preparedness and the study skills students possess (Beil & Knight, 2007; Heredia, 1992; Zaritsky, 1990).

Student preparedness.

Sometimes academically talented high school students do not encounter the roadblocks to learning that develop skills to succeed in college; instead they have found

they could "get an *A* for just showing up" (Balduf, 2009, p.284). Sometimes, too, students don't embrace college programs designed to make up for a lack of skills. Alter and Adtkins (2001) described student resentment of an orientation writing assessment and subsequent limited use of a new writing center. The authors concluded that graduate students do not have time to access a writing lab. Therefore, a writing lab should be available online (p.504).

Discomfort with the environment is yet another kind of unpreparedness. Top economics universities, for example, sometimes create a competitive atmosphere distasteful to female students. From relationships with faculty, to coursework and concentration on math, women economics students found so many aspects of their experience stressful that only 60% said they would attend an economics graduate school again, while 83% of men indicated that they would (Colander & Holmes, 2007, p.105). Pertinent to the theme of discomfort with the environment, Quarterman (2008) administered a questionnaire to graduate school administrators to discover perceptions on retention of minority students. Because of a lack of diversity in the student body, administrators identified a theme of isolation and loneliness for which they felt minority students were unprepared.

High school environments also affect student preparedness for higher education. Kanesky and Keighley (2003) described boredom that emanated from text-book based lessons, creating disinterest and consequent failure to learn. The authors identified factors that lead to learning: "control" over what to learn (p.6) "choice" in what to learn (p.7); intellectual "challenge" (p.7); "complexity" or a stimulating environment; and "caring" teachers (p.10). To counteract boredom, Coughlin (2010) suggested teaching

skills in the "context of rich authentic academic learning opportunities that closely mirror the type of work done by professionals" (p.51).

Lack of preparedness for higher education can be addressed through two factors (ASHE-ERIC, 2003), the first of which, developing coping behaviors to adapt to social and academic challenges of college (p.48), is beyond the scope of this study. The second factor, however, forms the focus of this study: academic preparation (p.51), or the study skills students have or have not developed and which they do or do not apply.

Study skills.

Richardson, Robnolt, and Rhodes (2010) reviewed 40 years of research to synthesize the study skills that help students succeed in college: creating visual representations of information, previewing a text before reading, locating information, taking notes, taking tests, and listening and reading with attention and intention to learn (p.111-112). Lei, Rhinehart, Howard, and Cho (2010) proposed that instructors develop students' reading flexibility through focusing on the new while only browsing through the known and further build students' reading skills by showing them how to apply background knowledge and use the SQ3R method of studying by first surveying a text then turning headings into questions, reading to answer the questions, reciting the answers in writing, and finally reviewing the questions and answers before a test (p.31). Supporting the teaching of reading strategies as an important study skill, Taraban, Rynearson, and Kerr (2000) discovered that high achieving students used more reading strategies than did lower achieving peers, particularly the following: look for important information…draw on my prior knowledge…infer information…set goals for reading… search out information for goals…evaluate texts for goals…and vary style based on goals

(p.294-295). Onwuegbuzie, Slate, and Schwartz (2001) determined that 122 graduate education, speech language pathology, and psychology students studied did not recopy lecture notes, preview chapters, or list key words; had a "passive" reading style; and frequently could not remember what they had read (p.241). The authors suggested that students be taught to recopy lecture notes, create concept maps, and record new words and meanings (p.244).

While the call for writing skills as a component to success in college is strong (Beil & Knight, 2007; Hereida, 1992), the ability for students to learn those skills is troublesome. Beil and Knight (2007) discovered that students had not been taught to write college-length papers (p.7). Italian university students, expected to synthesize information from several texts, reported on one document at a time (Boscolo, Arfe, & Quarisa, 2007).

Some scholars address the dedication of time as an important study skill (Lahmers & Zulaur, 2000; Linderholm, Cong, & Zhao, 2008; Nonis & Hudson, 2010). However, for every report that claims that students who increase study time increase achievement, another report makes an opposite claim (Lahmers & Zulauf, 2000). Nonis and Hudson (2010) hypothesized that it is not the amount of time but the quality of study habits that builds academic skills. The authors showed that time impacted performance only when students were able to concentrate and had access to a good set of notes. Linderholm, Cong, and Zhao (2008) reported that low achieving students, in comparison to their higher achieving peers, spent more time in reading to study than in reading for entertainment. However this extra time did not result in students remembering what they had read.

Lei, Howard, and Cho (2010) suggested the following process to help students remember: First, peers pose questions; then students work together to answer the questions, clarify confusions, and predict what might come next in the text (p.37). Rather than focusing on peer support, Jones and Meecham (2010) suggested that students who are "learning resistors" (p.61) take charge of their own learning by developing confidence in their abilities through starting with simple texts that they can understand.

It might be conjectured that employing technology would be a wise use of students' study time. However, Illinois State University discovered that few students used chat reference facilities, preferring in-person help (Naylor, Stoffel, & Van Der Laan, 2008). McNamara (2010), however, described students' productive use of software designed to learn comprehension strategies to deduce missing information, make connections, and elaborate (p. 343). Makany, Kemp, and Dror (2009) also found technology helpful in developing nonlinear note taking skills. The authors compared a software program that creates treelike notes to linear notes. The treelike nonlinear notes did not have to be rewritten (p. 625). Further, the nonlinear notes produced higher comprehension, complexity, and metacognition, although they did not affect accuracy or memory (p. 629-630).

It is important for every university to determine whether or not students possess study skills to succeed in college. Otherwise, instructors are "just shooting arrows in the dark" (Zaritsky, 1990, in Heredia, p. 6). A practical step in discovering students' levels of preparation is through the survey that this study adapted (Congos, 1999), the results of which follow.

The Present Study

Information regarding student study behaviors is beneficial at the undergraduate and graduate level and can be used as part of the retention process. Traditionally, undergraduate skill assessment has been the primary focus of research inquiry; however, graduate students can also benefit from such measures. Moreover, institutions are beginning to recognize their role in retaining graduate students who might not have received adequate academic preparation during their undergraduate studies.

Research Questions

The overall purpose of this study was to investigate the relationship between the study behaviors students employ and level of post-secondary class in which they are enrolled. Students in undergraduate, masters, masters + seeking a certificate of advanced study (6th year), or an endorsement (092-Intermediate Administrator and Supervisor, 105-Department Chairperson), and doctoral classes were surveyed. The survey included sections on accessing information in the textbook(s), note taking, memory, test preparation, concentration, and time management. Specifically, this research sought to address the following research questions:

1. Are some study behaviors used more frequently than others?
2. Is there a relationship between the level of post secondary course and the frequency specific study skills are used?

Method

Participants

Participants for this research were selected through a convenience sampling procedure. Classes at the 200, 300, 500, 600, and 800 level were surveyed. While the

survey was anonymous and voluntary, it was administered during class time to improve the return rate. A total 148 students voluntarily participated in the study. The sample was mostly comprised of women (78%, n=115) which is representative of the female dominated classes in the social sciences (Ginther & Kahn, 2006). The sample was also predominantly masters students (52%, n=77). The descriptive statistical procedures showed that this overabundance of 500 level students did reduce the standard error of the mean but was unlikely to impact other calculations. Undergraduate students in the 200 and 300 level classes comprised thirty percent of the sample (25%, n=37, and 5%, n=8 respectively). The remaining participants were enrolled in classes beyond the masters level degree, 600 level (7%, n=11), and those pursuing a terminal degree, 800 level (10%, n=15).

The classes surveyed were drawn from multiple schools within a small urban university in New England. The schools varied in their demographics, including a school with a high traditional day student population, and schools with students who are attending classes in the evenings or weekends. Demographic data regarding socioeconomic factors and other academic indicators was not collected to reduce participant fear of identification, but would be an interesting modification for a future study.

Procedures

A search of possible instruments was conducted to identify a survey for the current study. Permission to modify and use the survey was sought. The survey, originally developed by Congos (1999), was modified to include limited demographic information and reformatted for ease of readability. Researchers provided an opportunity

for students to complete and score the survey in class. The responses were compiled into Microsoft Excel and analyzed using the Statistical Package for the Social Sciences (SPSS). The descriptive statistics for the sample were run as an aggregate and disaggregated by course level as designated by course number. As parametric assumptions for the data were not met, independent samples median tests and independent samples Kruskal-Wallis tests were used to investigate differences between groups and a Spearman rho correlation coefficient was used to investigate possible relationships..

Results

The data demonstrated high variances, with the lowest variances associated with textbook reading skills (Table 1). The small sample size may be responsible for some of the variability in scores, but the respondents in the 500 level group were sufficient in number to suggest there may be other factors influencing the widely ranging scores. While Table 1 includes parametric descriptives, because the data do not meet parametric assumptions comparisons between groups were made using the median and ranges.

For all six of the study skills measured, the respondents in the 800 level classes self reported slightly higher scores than did respondents at any other level. A marked difference was seen in the test preparation skill. The 800 level respondents are in classes that will culminate in a comprehensive exam. This is may have been a factor in the self reported scores. When looking at the ranges in scores, test preparation also demonstrated the largest ranges while textbook reading skills showed the smallest of the skills evaluated, with note taking the next smallest. Interestingly, the test preparation variances also demonstrated a trend, the lower level classes exhibited a higher variance.

Table 1. Study skill results, descriptive statistics

Course Level	Mean	Std Error	Std Dev.	Variance	Minimum Value	Maximum Value	Range	Median
Note Taking Skills								
200	18.84	0.943	5.737	32.917	9	34	25	18
300	15.63	0.800	2.264	5.125	13	20	7	15.5
500	18.12	0.623	5.463	29.841	6	30	24	18
600	17.18	0.971	3.219	10.364	13	22	9	17
800	20.13	1.309	5.069	25.695	9	28	19	21
Memory Skills								
200	31.57	1.177	7.159	51.252	19	44	25	31
300	33.25	1.656	4.683	21.929	29	40	11	31.5
500	32.04	0.765	6.711	45.038	12	45	33	32
600	31.73	1.063	3.524	12.418	24	36	12	32
800	35.20	1.243	4.814	23.171	27	42	15	35
Test Preparation Skills								
200	42.73	1.564	9.512	90.480	23	59	36	44
300	43.50	2.726	7.709	59.429	31	56	25	43
500	43.62	0.798	7.002	49.027	32	60	28	42
600	42.18	2.066	6.853	46.964	30	52	22	44
800	49.93	1.614	6.250	39.067	41	60	19	47
Concentration Skills								
200	35.46	1.258	7.654	58.589	20	49	29	37
300	39.63	1.889	5.344	28.554	34	46	12	38.5
500	37.62	0.723	6.345	40.264	24	57	33	37
600	39.00	1.572	5.215	27.200	30	46	16	38
800	38.67	1.460	5.715	32.667	26	47	21	39
Time Management Skills								
200	18.19	0.969	5.892	34.713	8	33	25	17
300	16.13	1.913	5.410	29.268	8	23	15	16.5
500	20.55	0.718	6.303	39.725	6	42	36	21
600	17.91	1.781	5.907	34.891	8	28	20	15
800	21.47	1.291	4.998	24.981	11	29	18	21
Textbook Reading Skills								
200	24.38	0.941	5.727	32.797	13	36	9	24
300	27.38	1.253	3.543	12.554	23	33	10	26.5
500	26.06	0.646	5.672	32.167	16	53	37	26
600	27.45	0.938	3.110	9.673	23	34	11	27
800	29.00	1.028	3.982	15.857	23	35	12	29

There were no significant differences in the medians for any of the groups. The median test approached significance for test preparation (p=.099) and textbook reading skills (p=.104). Interestingly, the middle level course evaluated, the 500 level classes, had the lowest scores in test preparation. In general the test preparation skills scores were

higher than the rest of the skills surveyed. The median score for test preparation skills ranged from 42 to 47, with the next highest median scores associated with concentration skills (37-39). Both note taking skills and time management skills had the lowest medians, 15.5-21 and 15-21 respectively. The median scores for textbook reading skills was slightly higher, 24-29, and memory skills slightly higher than that (31-35). When the distributions of the scores were analyzed using the independent samples Kruskal-Wallis test, there were statistically significant differences in textbook reading skills (p=.033), test preparation skills (p=.049) and time management skills (p=.044).

There was a slight but significant positive relationship between course level and textbook skills, p<.01 and time management, p<.05 (Table 2). There were no other significant relationships, which may be due in part to the high ranges in the data.

Table 2. Spearmen's rho correlations between class level and study skill use.

Study skill	Correlation Coefficient	Significance	N
Note Taking Skills	.052	.530	148
Memory Skills	.094	.256	148
Test Preparation Skills	.131	.112	148
Concentration Skills	.124	.132	148
Time Management Skills	.166*	.044	148
Textbook Reading Skills	.223**	.006	148

* p=.05
**p=.01

Conclusions

The current study sought to identify whether the participants used certain study skills more frequently than others. The results indicate that test preparation skills were used more frequently than the other skills. Concentration and memory skills were the next two most frequent skills reported. The least frequent skills used by the participants

were note taking, time management and textbook skills. Though note taking, time management and textbook skills are important components of test taking, students might not link their behavior throughout a course as being related to performance on a test or culminating activity. This potential disconnect may compromise academic performance. The increased use of electronic course management programs (e.g. Blackboard) where lecture notes can be posted online may also influence note taking and textbook skills. Since the study did not explore methods of instruction and their impact on study skills, it remains unclear if there is a relationship between these variables.

With the exception of students at the 500 (masters) course level, test preparation skills had the highest median. The 500 level students may be evaluated through methods other than testing (e.g. final projects and papers) as they are primarily in programs that train practitioners and therefore have less need than the undergraduate students to prepare for exams. Given that the doctoral student participants will ultimately prepare for a culminating exam, they might be more apt to use test preparation skills. The remaining students might potentially view test preparation as a high stakes activity similar to their secondary school experiences and place higher value on test preparation. The relationship between study skills and academic performance is beyond the scope of the current study; however, future research studies should explore this relationship.

The data from the current study also suggest that the higher the course level the more adept students become at managing time and navigating through textbook content. This may be related to advanced (i.e. doctoral level) students having multiple demands on their time thus requiring good time management skills. Moreover, students at higher course levels may have more practice accurately identifying salient textbook material.

These students may also have been able to advance in their academic careers because over time they were able to identify the most appropriate study strategies for their learning style. Future research might include a longitudinal study to explore study skill acquisition and its impact on persistence.

Students in the higher courses also displayed less variability in the study skills utilized. Perhaps students in the higher courses focused primarily on strategies they have identified as leading them to the most success and did not waste time engaging in those that do not. Since time management was used more frequently among these more seasoned students, this may be related to lower variability as well. Conversely, students in lower courses reported higher variability in test preparation skills. These students might have not have identified the skills leading them to the most success and they may not have had direct instruction regarding the various study skills.

Overall, the results of the current study indicate that students in the higher course levels tended to use the study skills measured more frequently than students in lower level courses. Perhaps as students advance in course level and to higher levels of education, they are more aware of the need for ongoing and judicious use of the skills identified. Since study skills have been identified as a factor that affects success (Richardson, Robnolt, & Rhodes, 2010) students who do not master this concept may not have been retained within the academic environment at the undergraduate level or do not move on to graduate programs.

The current study did not include information regarding participant demographics or academic preparation nor did it include a method to evaluate the match or mismatch between participants' self-reports and more objective measures of performance. Future

research should include evaluation of the relationship between study skills and student performance.

Educational Implications

The information gathered from this research has implications for universities, retention programs, and post-secondary faculty members. Traditional notions regarding education might lead one to believe graduate students do not require academic support or basic study skill development. However, in order to retain students across educational levels, universities must provide opportunities for study skill acquisition and development. The results of this study suggest that even at the graduate level students might not be aware of effective study behaviors. Participants in the current study appeared open to the study skills inventory and its results and indicated that it helped them better understand how to study. Though doctoral students may have less need to develop study skills, we believe that masters students might need such support. Post-secondary faculty can easily incorporate the survey into their courses at the start of the semesters to help students better attain their academic goals. Student retention models (e.g., Bean, 1990; Tinto, 1993; Rovai, 2003) highlight the role of institutions *and* students in student performance; by incorporating assessment and direct instruction of study skills at all course levels, students can become more actively involved in their retention and engagement.

University based intervention programs would do well to offer study skill seminars across course levels rather than focus solely on freshmen students. Given the numbers of undergraduate students requiring remediation (National Center for Education Statistics, 2004) and reports regarding the inadequacy of secondary education for some

students (Autor, 2001) a case has already been made for such focus on the undergraduate level. Though previous research (Alter & Adtkins, 2001) indicated reluctance on the part of graduate students to engage in skill assessment, anecdotal evidence by the investigators of this study suggests that undergraduate and graduate students see the need for and appreciate academic support. Direct instruction regarding strategies for success and support coupled with high expectations may well be the formula to increase student endorsement and use of study skills. When formal academic support programs do not exist at an institution, the study skills survey used in this research is readily available and can be used at the start of the semester and discussed in class. By incorporating the assessment, faculty signal their students that they are interested in their academic success and that they are willing to support them in demonstrating excellence.

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