University of Northern Iowa

UNI ScholarWorks

2007

Approaches to studying and study tactics of baccalaureate nursing students

Lisa D. Brodersen
University of Northern Iowa

Let us know how access to this document benefits you

Follow this and additional works at: https://scholarworks.uni.edu/etd

 Part of the Higher Education Commons, and the Nursing Commons

Recommended Citation

Brodersen, Lisa D., "Approaches to studying and study tactics of baccalaureate nursing students" (2007). *Dissertations and Theses @ UNI*. 758.
https://scholarworks.uni.edu/etd/758

APPROACHES TO STUDYING AND STUDY TACTICS

OF BACCALAUREATE NURSING STUDENTS

A Dissertation

Submitted

in Partial Fulfillment

of the Requirements for the Degree

Doctor of Education

Approved:

_____

Dr. Leigh Zeitz, Chair

_____

Dr. Kavita Dhanwada, Committee Member

_____

Dr. Lynn Nielsen, Committee Member

_____

Dr. Timothy Weih, Committee Member

_____

Dr. Barry Wilson, Committee Member

Lisa D. Brodersen

University of Northern Iowa

December 2007

UMI Number: 3298304

Copyright 2007 by
Brodersen, Lisa D.

All rights reserved.

INFORMATION TO USERS

The quality of this reproduction is dependent upon the quality of the copy
submitted. Broken or indistinct print, colored or poor quality illustrations and
photographs, print bleed-through, substandard margins, and improper
alignment can adversely affect reproduction.
    In the unlikely event that the author did not send a complete manuscript
and there are missing pages, these will be noted. Also, if unauthorized
copyright material had to be removed, a note will indicate the deletion.

UMI®

UMI Microform 3298304
Copyright 2008 by ProQuest Information and Learning Company.
All rights reserved. This microform edition is protected against
unauthorized copying under Title 17, United States Code.

ProQuest Information and Learning Company
300 North Zeeb Road
P.O. Box 1346
Ann Arbor, MI 48106-1346

Copyright by
LISA D. BRODERSEN
2007
All Rights Reserved

APPROACHES TO STUDYING AND STUDY TACTICS

OF BACCALAUREATE NURSING STUDENTS

An Abstract of a Dissertation

Submitted

in Partial Fulfillment

of the Requirements for the Degree

Doctor of Education

Approved:

_____

Dr. Leigh Zeitz, Committee Chair

_____

Dr. Sue Joseph
Interim Dean of the Graduate College

Lisa D. Brodersen

University of Northern Iowa

December 2007

ABSTRACT

This research was designed to describe study approaches and study tactics used by baccalaureate nursing students. Previous inquiry indicates that students will take a Deep, Strategic, or Surface approach to studying and will use specific study tactics to meet the demands of their learning contexts.

The Approaches to Study Skills Inventory for Students (ASSIST) was administered to 174 students in Anatomy and Physiology, Pathophysiology, and Nursing Care of the Adult Client. Failing students were less likely to participate. The ASSIST had acceptable internal consistency reliability and construct validity. A majority (55%) of students took a Strategic approach to studying; smaller proportions adopted Deep (26%) and Surface (19%) approaches. Deep and Strategic approach scores were positively correlated with final course grades, GPAs, study hours, and students' ratings of their course performance. Surface approach was negatively correlated with the aforementioned variables. Age was positively correlated with Deep approach, but negatively correlated with Surface approach. Strategic approach was negatively correlated with hours of paid work.

Study tactics were identified by interviewing 13 high, medium, and low achieving students. Students had varied conceptions of their learning contexts and what they did to prepare for exams. All students experienced lecture-style teaching methods and fact-based assessment. The predominant in-class activity was note-taking, conceptions of which were related to whether a note-taking handout was provided, year of study, and academic achievement. Year of study and academic achievement were related to what

students did to prepare for exams and the number of study tactics they used, which ranged 1-5, the most frequent being notes review.

It is concluded that Deep, Strategic, and Surface study approaches are related to academic factors and academic achievement. There are relationships between students' conceptions of their learning contexts, what they do to learn and prepare for exams, year of study, use of study tactics, and academic achievement. Conclusions are limited by an under-representation of failing students. These findings have implications for the assessment and identification of students' study approaches. Additional research is needed to describe the study tactics students choose and to determine how those tactics relate to academic achievement.

DEDICATION

I dedicate this work to my family, spouse Kirby, daughter Afton, and son Trent.

They have heard me say too many times, "I can't. I have to work on my dissertation."

Well, I'm done now. Let's party.

ACKNOWLEDGEMENTS

First I recognize my dissertation committee at the University of Northern Iowa: Dr. Leigh Zeitz, Dr. Kavita Dhanwada, Dr. Lynn Nielsen, Dr. Barry Wilson, and Dr. Timothy Weih. I thank them for their intelligence, flexibility, patience, endurance, and expertise. As I move beyond this experience, I will always smile when I think of them. Special acknowledgment is warranted for Dr. Zeitz who served as my advisor. Although our association was not free from moments of strain, no doubt it was subtly nurtured and sustained by our mutual love of bicycling, concept mapping, and Macintosh computers.

Next I must acknowledge my overseas mentor, Dr. Noel Entwistle, Professor Emeritus, Department of Higher and Community Education, School of Education, University of Edinburgh, Scotland: He provided me with the ASSIST survey and answered numerous questions via e-mail.

I am particularly grateful for the expertise of Dr. Fred Lorenz, University Professor, Institute for Social and Behavioral Research, Iowa State University, Ames. Dr. Lorenz graciously conducted the confirmatory factor analysis on my survey data.

I must thank my Allen College "bosses." I thank Dr. Jerry Durham, Chancellor and Professor of Nursing, for his kind and competent leadership, for providing me with time to complete this work, and for numerous other essential resources. I thank Dr. Susan Dawson, Dean of Academic Affairs and Professor of Nursing, for making possible the adjustment in my workload while I was writing my dissertation and for her constant encouragement and advice on how to market my work. I am exceedingly grateful to my

local mentor Dr. Nancy Kramer, Professor and Associate Dean, Division of Nursing, for her friendship, collegial support, and humble presence.

It is essential that I recognize my colleagues at Allen College. In particular, I must thank Melissa Kane, Barrett Librarian, and David Wu, Instructional Technologist, for their prompt and efficient attention to my publication requests. In addition, although their names are too numerous to include here, it is essential that I thank the remaining Allen College faculty and staff for their steadfast support and sincere inquiries about my dissertation progress.

Finally, thank you in advance to all of the aforementioned individuals and groups for celebrating with me the conclusion of this endeavor. We too, shall party.

TABLE OF CONTENTS

LIST OF TABLES

CHAPTER 1

INTRODUCTION

The fundamental purpose of nursing education is to prepare students for careers in
nursing, but the ultimate goal is to develop graduates who can think critically and act
competently in complex patient care situations (August-Brady, 2005; Candela, Dalley, &
Benzel-Lindley, 2006; O'Connor, 2001, p. 1). Achieving this goal is particularly salient
due to the current and projected shortage of registered nurses (American Association of
Colleges of Nursing [AACN], 2007a; American Nurses Association, 2006). Based on
historical trends for nursing school enrollments, the average age of the registered nurse
(RN) workforce, and the number of licensed RNs who were actually practicing nursing,
in 2004 the U.S. Department of Health and Human Services Health Resources and
Services Administration (USDHHS-HRSA, 2004) estimated that U.S. nursing programs
would need to increase the number of graduates by 90% in order to meet the projected
2020 demand for RN Services. Providing sufficient numbers of graduates who possess
the necessary qualities and skills depends heavily on the academic success of nursing
students and their ability to persevere toward a degree.

The increasing heterogeneity of the U.S. population is reflected in the changing
demography of the college student population (Norbeck, 1995; Seidl & Sauter, 1990;
Wirt et al., 2004). Although the representation of minorities and men in nursing is low
(AACN, 2006, p. 6; National League for Nursing [NLN], 2006a, p. 288), the composite
of the typical nursing student is becoming increasingly non-traditional as more adults of

non-traditional age choose nursing as their first or perhaps a second career (Jeffreys, 1998; Norbeck, 1995; Seidl & Sauter, 1990).

According to the NLN (2006a), "compared with U.S. two-year and four-year colleges and universities, nursing programs show relatively high first-year retention rates" (p. 288), yet it is not uncommon for nursing students to struggle with their natural science courses (Caon & Treagust, 1993; Kumar, 2005; Sutcliffe, 1993) and to experience higher failure and dropout rates for anatomy, physiology, chemistry, and microbiology than other general education courses (Kumar, 2005; Potolsky, Cohen, & Saylor, 2003).

Success and persistence in higher education, including nursing education, is dependent upon psychological, social, cultural, economic, and academic factors (Campbell & Dickson, 1996; Chacko & Huba, 1991; Jeffreys, 2001; Robbins et al., 2004; Wells, 2003). Colleges and universities try to take a preventative approach to academic struggle and student attrition by imposing admission criteria. Students who plan to major in nursing must meet college or university admission criteria and nursing program admission criteria. Admission criteria are established on the basis of academic factors that are related to a student's chances of progressing successfully toward graduation. The majority of post-secondary institutions in the U.S. rely on a combination of high school grade point average (GPA), class rank, and college admissions tests scores (American College Test [ACT] or Scholastic Aptitude Test [SAT]) as criteria for accepting students who are most likely to complete a course of study in college (Breland, Maxey, Gernand, Cumming, & Trapani, 2002). While admission criteria provide some assurance that

students possess certain attributes associated with academic success, they are no guarantee that success will occur. It is the combination of academic qualifications with other psychological, social, cultural, economic, and academic factors that predicts most precisely students' successful continuation in college (Lotkowski, Robbins, & Noeth, 2004; Robbins et al., 2004).

Recently, due to a steady increase in the average number of applicants, nursing programs have been in the enviable position of admitting only the most highly qualified students. Unfortunately this position has been accompanied by the need to deny admission to many qualified applicants due to insufficient resources and too few qualified nursing faculty (AACN, 2007b; NLN, 2006a). Based on this information, there is no reason to suggest that nursing school applicants are any less qualified to succeed academically, or disadvantaged in some way as learners, compared to college students in general.

Despite being admitted from a rich pool of well-qualified applicants, there exists a rich pool of anecdotes about students who progressed easily through high school without ever studying, but who struggle academically as beginning nursing students. Assuming other factors that might affect academic success are stable, the most likely explanation for academic struggle relates to studying; either these students do not study enough, do not study effectively (Kiewra, 2002) or perhaps do not study at all.

Students may not study enough, effectively, or at all if they do not appreciate the relevance of course content to their overall academic goals. Common among beginning nursing students is the perception that topics in biological science courses are not relevant

to nursing practice (Caon & Treagust, 1993; Chapple, Allcock, & Wharrad, 1993; Trnobranski, 1996). The reason for the perceived irrelevance of science content probably stems from beginning nursing students' perceptions about the nursing profession in general and the reasons they chose to pursue nursing as a career. Typically, students major in nursing because they desire a career that allows them to help people (Larsen, McGill, & Palmer, 2003; Rognstad, Aasland, & Granum, 2004; Sand-Jecklin & Schaffer, 2006). Consequently, rarely is interest in science mentioned as a reason for interest in nursing (Beck, 2000; Williams, Wertenberger, & Gushuliak, 1997).

Beginning nursing students' perceptions of the nursing role may have been formed by personal encounters in the health care system wherein they observed nurses helping people who were sick, or were themselves helped by a nurse (Beck, 2000; Larsen et al., 2003; Sand-Jecklin & Schaffer, 2006). During these personal encounters a student was probably impressed by nursing skills such as listening to heart sounds, starting intravenous lines, measuring blood pressures, or changing dressings, but the type of knowledge that is required to perform those skills may not have been apparent. Because of their preconceived notions about the nursing role, nursing students may start their education with the perception that they will be taking care of patients and may "interpret and evaluate course demands in terms of clinical relevance and skills rather than broader discipline attributes such as higher level conceptual learning" (Cantwell, 1997, ¶2). Thus, "[w]hile educators may agree about the significance and benefit of a general education combined with specific professional knowledge and skills, students may often doubt its value." (Thornton, 1997, p.180).

Regardless of whether nursing students appreciate the relevance of science and other general education requirements to nursing practice, it will become apparent to them rather quickly that they will not progress to their clinical nursing courses or eventually become nurses if they do not succeed academically in their general education courses. Given this motivation to succeed, it seems likely that students will approach studying in distinct ways and in doing so, will employ specific study strategies or *tactics*. It is uncertain as to what those approaches and study tactics are.

Purpose

Given the current and projected shortage of nurses, it is essential to optimize the ability of student nurses to learn so that they can progress through nursing school and enter the profession. There is no literature to suggest that nursing students are less academically qualified compared to the undergraduate population in general, although their perception of the nursing role may affect their attitude toward science courses. Therefore, in this dissertation work it was assumed that nursing students are adult learners.

This dissertation work was informed by the literature on teaching, learning and assessment of nursing students' performance in academic and professional tasks in Australia, China, Iran, South Africa, the .United Kingdom (U.K), and the United States (U.S.). Standardized instruments that classify approaches to studying and learning have been used in this research to sort students into abstract categories according to how they process information, how they prefer to receive information, and factors that motivate them to learn and study.

The purpose of this study relates to the fact that current and past literature on nursing students' approaches to studying and learning does not explore the finer aspects of studying, such as how students deal with the content they are expected to learn, that is, the specific study tactics they use during their study time to grapple with, and manipulate information in order to learn it. More specifically, the purpose of this study was to describe approaches to studying and study tactics used by baccalaureate nursing students enrolled in Anatomy and Physiology I, Anatomy and Physiology II, Pathophysiology, and Nursing Care of the Adult Client and to identify the relationships between approaches to studying and selected factors associated with academic success. An additional purpose was to confirm the psychometric properties of the Approaches to Study Skills Inventory for Students (ASSIST), the survey tool used to measure approaches to studying in this research. Specifically, the following research questions were addressed:

1. What is the dominant study approach used by baccalaureate nursing students while taking Anatomy and Physiology I (API), Anatomy and Physiology II (APII), Pathophysiology (Patho), and Nursing Care of the Adult Client (NCAC)?

2. Is there a relationship between study approaches used by baccalaureate nursing students and academic success as indicated by final course grade percentage, and if so, what is the nature of the relationship?

3. Is there a relationship between study approaches used by baccalaureate nursing students and cumulative GPA achieved prior to the semester during which the student participated in the study, and if so, what is the nature of the relationship?

4. Is there a relationship between study approaches used by baccalaureate nursing students and cumulative ACT score achieved prior to the semester during which the student participated in the study, and if so, what is the nature of the relationship?

5. Is there a relationship between study approaches used by baccalaureate nursing students and age in years, and if so, what is the nature of the relationship?

6. Is there a relationship between study approaches used by baccalaureate nursing students and number of hours spent each week in paid employment, and if so, what is the nature of the relationship?

7. Is there a relationship between study approaches used by baccalaureate nursing students and number of hours spent each week studying, and if so, what is the nature of the relationship?

8. Is there a relationship between study approaches used by baccalaureate nursing students and their rating of performance in the course, and if so, what is the nature of the relationship?

9. What types of course characteristics and teaching methods do baccalaureate nursing students prefer?

10. Is the ASSIST a valid and reliable instrument for assessing the study approaches of baccalaureate nursing students at Allen College?

11. What are baccalaureate nursing students' conceptions of the course for which they completed the ASSIST?

12. What are baccalaureate nursing students' conceptions of what their instructor does during class?

13. What are baccalaureate nursing students' conceptions of what they do during class?

14. What are baccalaureate nursing students' conceptions of what they do after class to learn course content?

15. What are baccalaureate nursing students' conceptions of what they do after class to prepare for exams?

16. What study tactics do baccalaureate nursing students use to learn course content and prepare for exams?

17. Is there a relationship between study tactics used by baccalaureate nursing students and course subject area, and if so, what is the nature of this relationship?

18. Is there a relationship between study tactics used by baccalaureate nursing students and student achievement, and if so, what is the nature of this relationship?

Significance of the Study

There is a need for research-based educational practices and an "inclusive science of nursing education" (Diekelmann, 2005, p. 64) generated by diverse approaches to inquiry, including "scientific, critical, feminist, phenomenological, and post-modern studies" (Diekelmann, p. 64). Subsumed by the need for a science of nursing education is the need to describe and understand how nursing students learn (NLN, 2005).

Describing how baccalaureate nursing students study is an initial step toward understanding how they learn and the extent to which they achieve academic success. Identifying differences in how nursing students study is necessary to developing composites of academically successful and unsuccessful students. Establishing the

psychometric properties of the ASSIST will determine whether it is a valid and reliable tool for evaluating study approaches in U.S. nursing students. Understanding what nursing students do when they study and establishing the psychometric properties of the survey will also help inform decisions about the need for a nursing-student specific study approaches survey. The knowledge generated by this study will contribute to the science of nursing education.

<div align="center">Limitations</div>

This study is limited by the relatively small sample of nursing students drawn from one baccalaureate nursing program. The sample is homogeneous with regard to biological sex, gender, and ethnicity. These limitations will prohibit generalization of findings to the population of nursing students. Furthermore, students were much more likely to complete the ASSIST if they expected to pass the course for which they were asked to complete it, so students who failed are underrepresented in the sample.

The study is also limited by the self-report nature of the Approaches and Study Skills Inventory for Students (ASSIST) used to measure approaches to studying, such that student answers may reflect socially acceptable responses rather than their actual study approaches. The ASSIST was developed and initially standardized in the United Kingdom, not in the U.S. and therefore its psychometric properties had not been established in any U.S. population until this dissertation work occurred. The instrument did not adequately answer all of the research questions. Specifically, the ASSIST did not provide information about specific study tactics students used when they study, nor was it expected to. In retrospect, instruments such as the Learning and Study Strategies

Inventory (LASSI; Weintstein & Palmer, 2002) or the Motivated Strategies for Learning

Questionnaire (MSLQ; Pintrich, Smith, Garcia, & McKeachie, 1991).) may have been

more appropriate, or at least could have been used in addition to the ASSIST because

these instruments include items that measure specific study tactics.

In order to answer research questions not accommodated by the ASSIST,

interviews were conducted with students who demonstrated varying degrees of academic

success in the courses for which they were asked to complete the survey. The quality of

the interview data is subject to some of the same limitations of self-report instruments.

Specifically, students may have provided socially acceptable responses during the

interviews. Furthermore, interviews were conducted in the semester following the course

for which students completed the ASSIST, so students may have forgotten the study

tactics they used during that course. The interview component of the study was also

limited by the reluctance of failing students to participate, resulting in their under-

representation in the interview data.

<div align="center">Definition of Terms</div>

Academic success: Also called academic achievement. Refers to a passing grade

of "C" or better, or 2.0 or more grade points earned in the course for which students were

asked to complete the ASSIST. Grades are figured by totaling the points students earned

on course work and dividing the total by the maximum points possible to achieve a grade

percentage (Chacko & Huba, 1991). A grade percentage of 73% corresponds to a "C"

according to the Allen College (2006) grading scale (Table A1, Appendix A).

Approaches to studying: Refers to the learning strategies students use depending on their intention to understand course content by seeking meaning, relating ideas, and using evidence or to reproduce it in order to meet the requirements of graded assessment. Approaches to studying are classified as Deep, Strategic, or Surface Apathetic (Entwistle, 2003). This term is used interchangeably with study approaches, learning approaches, and approaches to learning.

Baccalaureate nursing student: A college student who is enrolled in a program of study in nursing that will result in a Bachelors of Science in nursing (BSN) degree.

Course content: The information that students are expected to learn while enrolled in a college course. This term is used interchangeably with learning material, learning content, course information, and course theory.

Conceptions of learning: Individual beliefs about what it means to learn: to understand and apply or to merely memorize facts (Entwistle & Peterson, 2004).

Cumulative grade point average (CGPA): The sum of grade points that a student has earned in courses on his or her program of study. Grade points correspond to letter grades such that 4.0 represents a letter grade of "A," 0 represents a letter grade of "F," and 2.0 represents a letter grade of "C" (Allen College, 2006).

Deep Approach: An approach to studying taken by students who are motivated by personal interest in course content and intend to find for themselves meaning and achieve understanding in it. This approach is motivated by interest in the learning content and the intention to understand it, and the use of study strategies intended to seek meaning, relate ideas, and consider evidence. (Entwistle, 2000).

Holist strategy: A type of information processing in which students who intend to understand concepts will identify relationships between those concepts in order to achieve a comprehensive or broad understanding (Pask, 1976).

Learning context: Refers to the teaching-learning environment. It is the nature of the course content and students' interest in it, how student learning is measured or assessed, the teaching methods, and learning facilities and resources (e.g., library, computer lab). How students perceive their learning context affects their approaches to studying (Entwistle, 2000). For the purposes of this study learning context refers to the teaching and assessment methods used in the course for which students completed the ASSIST: Anatomy and Physiology (AP) I, APII, Pathophysiology (Patho), and Nursing Care of the Adult Client (NCAC).

Learning strategy: Refers to the type of cognitive processing, holist or serialist, which students will use when learning is conceived of as gaining understanding (Pask, 1976).

Learning style: Refers to the culmination of motivation maintenance, task engagement, and cognitive controls, which collectively are mediated by meta-cognitive skills that facilitate organized studying, awareness of the requirements of the learning situation, and awareness of learning success (Curry, 1991).

Level of Academic Achievement: Categorized as "high," "medium" or "low" based on letter grades earned by students in the courses for which they completed the ASSIST. Students who earn an A or A-minus are defined as high achievers; students who earn B-plus, B, B-minus, C-plus, or C are defined as medium achievers; students who

earn grades of C-minus or lower are defined as low achievers. See also "Academic Success."

Preferences for Different Types of Course and Teaching: Refers to fondness or attraction to specific learning activities, teaching methods, and graded evaluation methods that comprise the learning context (Entwistle, 2000; Entwistle, Tait, & McCune, 2000).

Serialist strategy: A type of information processing in which students who intend to understand concepts will concentrate systematically on one concept at a time, while critically and cautiously considering each piece of evidence (Pask, 1976).

Strategic Approach. The Strategic Approach is an approach to studying taken by students who are motivated "to excel on assessed work" (Entwistle, 1994, p. 2) and achieve the highest possible grades (Entwistle, 2000, ¶ 8). Taking a strategic approach to studying involves organizing and managing studying time, being aware of assessment demands, being motivated to achieve academic success, and monitoring the effectiveness of one's efforts (Centre for Research on Learning and Instruction, 1997).

Studying: Studying is an intentional, self-directed cognitive, affective, and psychomotor activity during which students engage with course content and interact with it by using approaches to studying and study tactics.

Study tactics: Study tactics, also called study strategies (Weinstein & Mayer, 1986), refers to psychomotor activities students use intentionally to learn. Tactics include, but are not necessarily limited to, interaction with and manipulation of course content, such as reading, reviewing, re-writing, outlining, condensing or expanding course lecture

notes; reading, re-reading, reviewing, and reflecting on reading assignments or unassigned, relevant texts; highlighting text to select important points or ideas; comparing and contrasting ideas or information; creating exam items to be used for self-assessment; group discussions of course content; group quizzing and question and answer sessions over course content; drawing diagrams or concept maps; using analogies, metaphors and mnemonics (Hadwin, Winne, Stockley, Nesbit, & Woszczyna, 2001; Weintstein & Mayer, 1986).

Surface Apathetic Approach. An approach to studying taken by students who intend to do the least amount of work possible in order to pass a course, and which involves only superficial or shallow engagement with learning material. Memorization and recall of facts in order to meet the requirements of exams and other graded assignments is the primary study process or strategy (Entwistle, 1994; Entwistle & Peterson, 2004).

Teaching methods: Refers to methods of transmitting learning content, including, but not limited to, delivering a lecture, making reading assignments, organizing discussions and debates, facilitating cooperative learning activities and case studies, demonstration of psychomotor skills with student return demonstration, assigning writing activities or the creation of presentations and audio-visuals and so on (Rowles & Brigham, 2002). These methods are also called teaching activities and teaching strategies.

Versatile learner: A student who will use both holist and serialist strategies to process information (Pask, 1976).

CHAPTER 2

LITERATURE REVIEW

Overview

This chapter features a review of literature that is relevant to the education and learning of nursing students. The purpose of nursing education and education systems that prepare students to obtain licensure as a registered nurse (RN) are described. The relationships between academic success, learning, and successful RN licensure are explained. The neurophysiology of learning is described along with Ausubel's (2000) Assimilation Theory and Student Approaches to Learning (SAL) theory in order to establish a framework for research on how nursing students learn and approach studying. The relationship between approaches to studying and educational contexts (e.g., teaching and assessment methods) is explained. Self-report instruments that have been used in the study of learning in nursing students in the U.S. and other countries are described and the nursing educational systems in those countries are compared. To conclude this chapter, research findings from studies on approaches to studying in nursing students are reviewed and gaps in that research are noted. The lack of research on approaches to studying in U.S. nursing students and the absence of knowledge about specific study tactics used by nursing students in general are identified as the rationale for this dissertation study.

Purpose and Nature of Nursing Education

A registered nurse (RN) must be able to provide safe, effective, evidence-based nursing care in a variety of health care delivery settings to diverse populations with complex health care needs (Li & Kenward, 2006; Speziale & Jacobson, 2005). Nursing

care is a process that involves assessing clients, making nursing diagnoses, planning and implementing nursing interventions, and evaluating the effectiveness of those interventions (Black & Chitty, 2007). Assessing clients requires that RNs use health assessment skills, operate biomedical equipment, and interpret data from multiple sources. Nursing interventions include, but are not limited to client teaching, intravenous catheter insertion, dressing changes, non-pharmacological comfort measures, and therapeutic communication. RNs are also responsible for administering medical treatments and monitoring their effectiveness (Black & Chitty, 2007; Smith & Crawford, 2004a; Smith & Crawford, 2004b).

Graduates of U.S nursing programs may pursue RN licensure by obtaining one of the following three types of qualifications: (a) a bachelor's of science degree in nursing (BSN), (b) an associate degree in nursing (ADN), or (c) a diploma in nursing (Varnell, 2003). ADN programs are most numerous in the U.S. (U.S. Department of Labor— Bureau of Labor Statistics [USDL—BLS], 2006) and produce the greatest numbers of pre-licensure nursing graduates (USDHHS-HRSA, 2006; Varnell, 2003). ADN programs are situated in community colleges and can be completed in 2-3 years. Although for many years they were the most prevalent type of nursing education program in the U.S, Diploma programs are now the fewest in number and produce the smallest number of nursing graduates each year. Diploma programs offer education and training in hospital-affiliated schools and take about three years to complete. Students are awarded a diploma, not an academic degree (USDL—BLS, 2006; Varnell, 2003). To obtain the BSN, students attend four-year baccalaureate programs located in, or affiliated with

colleges and universities. BSN programs are fewer in number than ADN programs, but in recent years have been producing graduates at a rate that just slightly exceeds ADN programs (USDHHS-HRSA, 2006; Varnell, 2003). A BSN maximizes opportunities for graduates, allowing them to practice as professional nurses in the widest variety of settings and permitting the greatest opportunity for career and educational advancement. ADN and diploma graduates can practice in a more limited range of settings and career advancement generally requires obtaining a BSN (USDL—BLS, 2006).

Despite the varying lengths of nursing education programs and the varying levels of degrees conferred, and despite an enduring, but ultimately ineffective movement to situate nursing education entirely in institutions of higher learning and to require the BSN as the only qualification for obtaining RN licensure, graduates from all three types of nursing programs are eligible to take the National Council Licensure Exam for Registered Nurses (NCLEX-RN®). Successfully completing the NCLEX-RN® certifies that graduates are safe and competent for entry-level RN nursing positions (Haas, Nugent, & Rule, 2004; Seldomridge & DiBartolo, 2004). Qualifying to take NCLEX-RN® requires that students graduate from state-approved nursing schools. Academic success is necessary for graduation, regardless of the type of pre-RN licensure program.

Factors Affecting Academic Success

To a certain extent, success in completing nursing school and the NCLEX-RN® can be predicted from data that is routinely collected as part of the college admission and progression process. Academic success in nursing school is related to entry qualifications such as high school GPA, high school class rank, and ACT scores (Benda, 1991). Also

affecting academic success are grades in science courses (Campbell & Dickson, 1996; Symes, Tart, & Travis, 2005) such as pharmacology, pathophysiology (Byrd, Garza, & Nieswiadomy,1999) anatomy, physiology, and microbiology (Higgins, 2005). Older nursing students have a greater chance for academic success (Byrd et al., 1999; Houltram, 1996; McGeever, 1994; Ofori, 2000; Ofori & Charlton, 2002; Salamonson & Andrew, 2006). McGeever has attributed the positive association between age and academic success to "older students making better use of their time, being able to concentrate more on their studies, and [using] the strategies of information processing and self testing to a higher degree than … younger students" (p. 107). Being a member of a racial or ethnic minority is negatively associated with academic success (Byrd et al., 1999; Keane, 1993; Salamonson & Andrew, 2006; Symes, Tart, & Travis, 2005; Symes, Tart, Travis, & Toombs, 2002).

Measures of self-efficacy, language ability, and reading ability have been found to relate positively to academic achievement in nursing students (Chacko & Huba, 1991). Self-monitoring and use of study strategies have been found to relate directly to concentration and preparation for class, while concentration and preparation for class relate directly to self-efficacy (Chacko & Huba). Students' approach to test-taking, specifically how they prepare for and take exams, has also been found to correlate with academic success (Keane, 1993; McGeever, 1994). Motivation to succeed has also been found to relate directly (McGeever) and indirectly (Chacko & Huba) to academic success.

Factors Affecting NCLEX-RN® Success

Numerous academic variables predict success on the NCLEX-RN®. These include grades in pathophysiology (Seldomridge & DiBartolo, 2004), medical-surgical nursing courses (Sayles, Shelton, & Powell, 2003; Seldomridge & DiBartolo, 2004; Steunkel, 2006), and natural science courses such as anatomy, chemistry, microbiology, and physiology (Campbell & Dickson, 1996; Higgins, 2005). Also related to NCLEX-RN® success are GPA (Campbell & Dickson, 1996; Haas et al., 2004; Sayles et al., 2003; Stuenkel, 2006), pre-nursing GPA (Campbell & Dickson, 1996; Seldomridge & DiBartolo, 2004; Stuenkel, 2006), ACT scores (Campbell & Dickson, 1996), SAT scores (Haas et al.; Stuenkel, 2006), and ethnicity (Haas et al., 2004; Sayles et al., 2003). Specifically, higher course grades, SAT and ACT scores, and GPA are positively associated with NCLEX-RN® success, while being a member of a racial or ethnic minority decreases the chances of passing the exam.

Despite documented relationships between academic variables, academic success, and passing the RN licensure exam, predicting success in nursing school and on NCLEX-RN® is an imprecise endeavor that yields inconsistent results (Benda, 1991; Campbell & Dickson, 1996; Seldomridge & DiBartolo, 2004). Such imprecision and inconsistency quite reasonably could be attributed to additional psychological, social, cultural, economic, and academic factors that are not routinely tracked in the college admission and progression process (Campbell & Dickson, 1996; Chacko & Huba, 1991; Jeffreys, 2001; Robbins et al., 2004; Wells, 2003). Thus, some risk factors for academic struggle

may not be readily apparent, in which case, nursing educators must accept what they cannot identify or control and focus on risk factors that are modifiable.

Poor academic performance is an example of an important and potentially modifiable risk factor for academic failure. Graduating from a state-approved nursing school and qualifying to take the NCLEX-RN® are contingent upon students' academic success during nursing school. Academic success, operationalized as course grades, is contingent on learning. Learning is contingent on students' ability to receive and process information in the central nervous system (Guyton & Hall, 2006; White, 1996), assign meaning to information and incorporate it into their cognitive structures (Ausubel, 2000), and use study strategies and tactics effectively as they approach the overall task of learning new information (Biggs, Kember, & Leung, 2001).

Theories of Learning

Neurophysiology of Learning

The extent to which learning occurs depends on the interaction of several factors, including student characteristics, teacher characteristics, the nature of the learning task, and the way learning is evaluated (Biggs et al., 2001; Chacko & Huba, 1991; Entwistle & McCune, 2004; Novak, 1998). Regardless of what is learned or how it is learned, there is no question that learning occurs as the result of neurophysiological processes which result in chemical and structural changes in the brain (White, 1996; Guyton & Hall, 2006). The neurophysiology of learning is complex and only minimally understood (Guyton & Hall), but it is generally accepted that learning begins with *thoughts*, which

result from a particular sequence of events that occur simultaneously in multiple areas of the nervous system (Guyton & Hall).

The sequence of events leading to thoughts is initiated by sensory stimuli—things that are seen, heard, smelled, touched, or tasted (White, 1996). A stimulus is transformed into an electrical impulse that is conducted along neurons with the help of chemicals called neurotransmitters (Guyton & Hall, 2006). The stimulus is registered as a thought in the short term memory. The thought remains in short term memory only seconds before one of two things happen: either (1) the thought ceases to occur because the stimulus that produced it ceases, or the nervous system ignores it, or (2) the thought is transformed into a more sustained memory (Guyton & Hall, 2006; White, 1996).

The transfer of thoughts to sustained memory occurs because chemical and physical changes leave a memory trace, like a walking path in the woods. Because the trace doesn't disappear once the immediate stimulus stops or the person begins to experience other stimuli or have other thoughts, it is *learned*. The memory trace may remain if reinforced by repeated stimulation, or it may fade as would the trail through a forest if the vegetation were not controlled by people walking on it or the application of regular maintenance (Guyton & Hall, 2006; White, 1996). Thus learning is not necessarily permanent. However, just as regular use and maintenance of a wooded trail would ensure its long-term existence, regular recall and use of knowledge or ideas will produce relatively permanent changes in the chemical and physical structure of the brain, thus ensuring continued access to knowledge (Guyton & Hall; White).

Cognitive Information Processing Theory

Learning is the result of more than the interaction of stimuli, electrical impulses, and chemical reactions that occur along a neuron. Learning is influenced by a host of physiological, psychological, and social factors (Driscoll, 2004). Fundamentally, learning occurs because the knowledge or idea that initiated it has relevance or meaning, perhaps because it is associated with pleasant or unpleasant sensations or emotions, is simply interesting, or is in some way useful to know (Ausubel, 2000).

Cognitive information processing (CIP) theorists articulate the neurophysiology of memory and learning using analogies such as (a) computer processing, storage and retrieval of data or (b) the Dewey Decimal System for classifying and shelving books in a library (Broadbent, 1966). CIP theory provided the foundation for theories about the depth or level of cognitive processing and its effect on the retention and recall of knowledge (Entwistle & McCune, 2004).

Ausubel (1968; 2000) conceptualized knowledge as a hierarchically organized *cognitive structure* (CS) consisting of the learner's cumulative learning and experience. According to Ausubel's Assimilation Theory, learning occurs when learning material is categorized under broad, general *anchoring ideas* already present in the CS. Metaphorically, anchoring ideas are the "hooks upon which new learning is hung" (Rakow, 1992, p. 18) or the "intellectual linchpins" of the CS (Ivie, 1998, p. 37). In the CS, anchoring ideas are stable, organized ideas created by previous *assimilation* of *potentially meaningful material*. Assimilation refers to the process by which new knowledge is integrated into the CS. Potentially meaningful material is the subject matter

that is related "non-arbitrarily," and "nonverbatimly" to relevant anchors in the CS

(Ausubel, 2000, p. 1). Thus, it follows that learning potentially meaningful content

involves *meaningful learning*.

The manner in which knowledge is assimilated depends on how learning material

relates hierarchically to existing anchoring ideas. Some learning material is *subsumed*

under broad, general and abstract anchoring ideas called *subsumers* (Ausubel, 2000;

Ausubel, Novak, & Hanesian, 1978, p. 68). When learners encounter content for which

assimilation by subsumption is not appropriate, for example, a new concept that is more

broad than its relevant anchoring ideas in the CS, assimilation occurs superordinately,

that is, the new concept is categorized hierarchically above existing information. If new

information is neither more broadly nor more specifically differentiated than its relevant

anchoring ideas, combinatorial assimilation is necessary. Combinatorial assimilation

occurs horizontally (Ausubel, 2000). According to Ausubel, the assimilation of

knowledge is facilitated when learning is *meaningful,* and *m*eaningful learning occurs

when new material is integrated with the current CS. Novak (1998) elaborates on

Ausubel's theory stating, "Knowledge that we have learned meaningfully, that we have

constructed from a union of our actions, feeling, and conscious thought, is knowledge we

control" (p. 31).

Not long after Ausubel presented Assimilation Theory and ideas about

meaningful learning, cognitive researchers elaborated on CIP theory by identifying

different hierarchical levels of information processing (Craik & Lockhart, 1972; Lockhart

& Craik, 1990) and proposing different levels of processing based on the learner's
intentions (Marton & Säljö, 1976a; Marton & Säljö, 1976b; Pask, 1976).

Deep and Shallow Levels of Information Processing

Craik and Lockhart (1972) proposed deep and shallow levels of processing,
whereupon they described shallow processing as an early, superficial form of analysis
from which a fleeting memory trace resulted. In contrast, deeper processing and analysis
of information was thought to produce a more resilient memory. Marton and Säljö
extended the concepts of deep and superficial CIP by proposing the dimension of
intention. Specifically, students' intentions, either to understand or memorize, when
presented with a learning assignment were proposed to influence whether or not they
pursued a shallow or deep approach to the learning task. If a student intended to
memorize and recall the content of the learning assignment then a shallow or *surface*
approach would do, but if s/he intended to understand the assignment then a *deep*
approach would be needed (Marton & Säljö, 1976a; 1976b).

Serialist and Holist Approaches to Learning

Pask (1976) proposed the notions of *holist* and *serialists* approaches to
understanding. According to Pask, students who intend to comprehend what they are
supposed to learn will attempt to understand in different ways. Pask proposed that a *holist*
approach would be demonstrated by students who set out to comprehend concepts and to
identify relationships between those concepts in order to achieve a comprehensive
understanding. A *serialist* approach would be taken by students who tried to understand
concepts by systematically concentrating on one concept at a time, while critically and

cautiously considering evidence. Pask suggested that a versatile learner would use both holist and serialist approaches to achieve understanding, and that relying on one or the other strategy exclusively would result in learning pathologies (Pask, p. 140).

<u>Student Approaches to Learning (SAL) Theory</u>

The emerging study of learners' intentions and the level at which they process information accompanied by the recognition of "the complexity of interrelationships affecting different ways of studying" (Entwistle & McCune, 2004, p. 327) marked the emergence of a "conceptual framework known generically as 'student approaches to learning' (SAL) theory" (p. 134). SAL theory attempts to account for variables that comprise a learning environment or context. These variables, referred to as *contextual variables*, include students' conceptions of learning and their preferences for certain types of courses and teaching methods. Contextual variables influence students' approaches to studying, which in turn affect learning (Biggs et al., 2001; Entwistle & McCune, 2004).

<u>Approaches to Studying</u>

Approaches to studying are the processes a student will use to achieve his or her academic goals or intentions. Intentions are of two types: the intent to understand information, and the intent to memorize information. Students who intend to understand will employ holist and serialist strategies in order to learn (Pask, 1976). The strategies or approaches a student will employ to achieve his or her academic goals or intentions are of three types: Deep Approach, Strategic Approach, and Surface Apathetic Approach.

Deep Approach. Students who take a Deep Approach to studying intend to find meaning and achieve understanding. These students are motivated by personal interest in the information they are supposed to learn and because they are interested they seek meaning, look for relationships between ideas, and identify evidence to warrant conclusions (Entwistle, 2000). When taking a Deep Approach, memorization and serialist processes may be used, but the student will also use holist strategies because s/he intends to "integrate, and so transform what is being learnt, within a personal framework" (Entwistle, 1994, p. 2).

Strategic Approach. The Strategic Approach refers to the intention "to excel on assessed work" (Entwistle, 1994, p. 2). This intention is "guided by an awareness of assessment criteria" (Entwistle & Peterson, 2004, p. 416) and motivates the student to be vigilant and organized in relation to course assignments, grading, and meeting the teacher's requirements. Students who take this approach may be motivated by the desire to do as well as possible in the course perhaps because they feel a sense of obligation to themselves or significant others (Entwistle & Peterson). The Strategic Approach involves assessing the learning context to identify the demands it will make, then determining which approach, Deep or Surface, will result in the greatest rewards in the course (Entwistle, 2000).

Surface Apathetic Approach. The Surface Apathetic Approach refers to the intent to do the least amount of work possible in order to pass the course. Because students who take a Surface Apathetic Approach read and concentrate only on what is required for assignments and exams, they are referred to as "Syllabus-bound." Memorization and

recall of facts in order to meet the requirements of exams and other graded assignments is the primary study process or tactic (Entwistle, 1994; Entwistle & Peterson, 2004). Students who take a Surface Apathetic Approach may lack a sense of purpose and feel no interest in the course topics, but they do not want to fail so they try to figure out what it takes to pass. Having no real desire to understand the course content results in "the intention to cope minimally with the course requirements, suggesting extrinsic interest which leads to routine memorization and unreflective study strategies" (Entwistle & Peterson, p. 416).

<u>Conceptions of Learning</u>

Conceptions of learning are an individual's beliefs about what it means to learn. Students begin college with pre-conceived notions about what they need to do to learn. Some students conceive of learning as an accumulation of facts needed to pass an exam. Facts presented by teachers, textbooks or other sources are memorized with the intent of using them to meet the requirements of the course. Other students conceive of learning as understanding. For these students "information is seen as having a purpose beyond acquisition: it also has to be applied" (Entwistle & Peterson, 2004, p. 411). A student's conceptions of learning influence how s/he approaches the task of studying and negotiating academic requirements such as assignments and exams (Entwistle, 2000).

<u>Preferences for Different Types of Course and Teaching</u>

Students have specific preferences for different learning activities, content delivery, and graded evaluation methods that comprise the learning context. Certain teaching methods are preferred by students who seek meaning and understanding of

course content. These methods put less emphasis on memorization of facts and more emphasis on demonstrating overall understanding (Entwistle, 2000; Entwistle, Tait, & McCune, 2000) and are thought to support a Deep Approach to studying. In contrast, teaching methods designed to deliver information which students are then required to reiterate in multiple choice exams are believe to support the Surface Approach (Entwisitle, 2000; Entwistle, Tait, & McCune, 2000).

Courses and Teaching that Support Understanding. Teachers who demonstrate for students their own ways of thinking as well as encourage students to think for themselves are thought to facilitate students' pursuit and achievement of understanding. Exams that allow students to demonstrate how they have thought about the course material are also believed to support student understanding, as is encouraging students to read beyond the assigned texts and assigning challenging texts that extend what was covered in lecture (Centre for Research on Learning and Instruction, 1997).

Courses and Teaching that Transmit Information. Students who prefer courses and teachers that transmit information want to be told exactly what to write in their notes during lecture and desire to be tested only on information that was presented in lecture. Certainty about the required reading and texts that feature easily learned specific facts and information are also student preferences consistent with transmitting information (Centre for Research on Learning and Instruction, 1997).

Relationship Between Contextual Variables and Approaches to Studying

Conceptions of Learning, Preferences for Different Types of Courses and Teaching Methods, and Approaches to Studying are not inherent, static, lifelong traits.

Students' conceptions of learning can develop over the course of their college careers, progressing from a less mature conception of fact-memorization to one in which "learning is equated with understanding" (Entwistle & Peterson, 2004, p. 411). However, conceptions of learning are grounded in the student's history of learning experiences, so it is possible that "the recurrence of similar situations may re-activate [less mature] conceptions, even when later ones have also been developed" (Entwistle & Peterson, p. 411). In other words, exposure to different learning contexts over the course of their educational careers raises students' awareness of their own learning conceptions and enables them to "adopt processes appropriate to varying tasks" (Entwistle & Peterson, p. 411). Thus, a student's conception of the type of learning required by a particular learning task, memorization and recall or understanding, will influence the particular approach to studying that s/he will pursue.

Teaching Strategies and Methods

Teaching methods are one aspect of the learning context that will influence approaches to studying, regardless of a student's personal preferences for, or habitual use of a specific type of approach. Students who enter higher education may have a particular conception of what it means to learn in a given situation, but their conceptions may not fit the demands of the learning context, resulting in use of the wrong study approach. Based on their past experience in educational settings, students will "interpret what is required of them" (Entwistle & Peterson, 2004, p. 412), but their past educational experiences may have induced in them "a way of thinking that is immediately challenged by university

work, although not in a sufficiently explicit manner for students to see how and when they need to change" (Entwistle & Peterson, p. 412).

Teaching strategies that are intended to provide students with a learning experience are referred to as learning activities (Jeffries & Norton, 2005, p. 187). Nursing students are likely to encounter any of the following learning activities: lecture, reading assignments, audio-visuals, computer programs, writing assignments (e.g. journaling, care plans, academic papers), discussion or debate, role playing, games, and simulations, and case studies (Jeffries & Norton, p. 188; Wirt et al., 2001).

Some learning activities are thought to facilitate active engagement of the student in the learning process, while others are believed to promote passive learning (McKeachie & Svinicki, 2006). Whether active or passive, all learning activities provide sensory stimuli that require processing if they are to become part of the student's cognitive structure. Passive learning activities transmit auditory and visual stimuli through lecture or other audiovisual sources. It is left up to the student to process the stimuli in some way if s/he intends to learn and understand it. Active learning activities are thought to put students in control of their learning by requiring their involvement and interaction in the learning task; active involvement is believed to make the learning experience more immediately meaningful (Jeffries & Norton, 2005).

Based on the notion that active learning activities place learners in control of their learning and are most likely to be meaningful, it seems that nursing students would prefer student-centered teaching methods. Historically, however, research has not provided support for this notion. Several older studies on nursing students' preferred learning

activities reveal preferences for passive methods such as lecture (Burnard & Morrison,

1992; Cowman, 1995; Dux, 1989; Ostmoe, Van Hoozer, Scheffel, Crowell, 1984;

Sweeney, 1990; Wells & Higgs, 1990). Only one study (Vaughan, 1990) reported that

lecture was the least preferred teaching strategy and that nursing students expressed an

overall preference for student-centered teaching methods (e.g., games and discussion).

These studies were conducted in the remote past and may simply reflect student

socialization to traditional teaching methods and passive learning activities (Jeffries &

Norton, 2005, p. 189). More current research supports the association between active

learning methods, favorable academic outcomes, and positive student attitudes toward the

active learning methods (Beers & Bowden, 2005; Costa, Van Rensburg, & Rushton,

2007; Johnson & Mighten, 2005; Tiwari et al., 2006), but there continues to be evidence

that students prefer "lecture over any other teaching method" (Walker et al., 2006, p.

373).

Although nursing educators acknowledge the importance and effectiveness of

active, student-centered learning activities in nursing education (Anderson, 1996; Beers

& Bowden, 2005; Cowman, 1995; Diekelmann & Ironside, 2002; Johnson & Mighten,

2005; NLN, 2006b), nursing students are likely to encounter lecture in their general

education and science foundation courses, particularly in their chemistry and anatomy

and physiology courses. The most recent data available from the National Center for

Education Statistics indicates that lecture is the "primary instructional method" (Wirt et

al., 2001, p. 79) used by 83% of "postsecondary instructional faculty and staff" (Wirt et

al., p. 79).

Although research may provide some support for the notion that lecture is not the best means of changing attitudes, instilling values or teaching psychomotor skills, it is acknowledged as an effective method for transmitting information (Bligh, 2000). Furthermore, proponents of lecture argue "people who vilify lectures are really denigrating bad lectures and that good lectures are still a legitimate and effective means of teaching" (Parker, 1993, ¶2), particularly when the content is largely factual material about which students have little or no prior knowledge. Despite ongoing debate, the current reality is that adult learners are more likely to encounter lecture than any other teaching method (Bligh, 2000; Johnson & Mighten, 2005; Wirt et al., 2001). Furthermore, Vaughan (1990) asserts that "it would be foolish to discount [lecture] as having no place in nurse education" (p. 933).

Regardless of how students are exposed to course content, they will be evaluated to determine how well they have learned it. Multiple choice exams are a frequently used method of evaluating how well nursing students learn course content, particularly in courses where lecture is the predominant learning activity (McDonald, 2002). In addition to the traditional multiple-choice and true-false items, multiple choice exams may feature alternative items such as multiple-response, matching, and fill in the blank. These methods of assessment occur in U.S. nursing education even though research on students in other college majors indicates that multiple choice-type exams are associated with surface approaches to studying (Newble & Jaeger, 1983; Scouller, 1998; Thomas & Blain, 1982; Watkins, 1982).

There is a dearth of research describing the effects of assessment methods on approaches to studying in the nursing student population. Lack of study in this area could be attributed in part to the reality that once nursing students graduate, in order to practice nursing they will be required to pass the National Council of State Boards of Nursing licensure exam, NCLEX®, which features multiple choice and some alternative style items. Nurse educators may believe that it is necessary to expose students to multiple choice assessment formats to ensure that students are accustomed to that particular style of exam, thereby attempting to avoid jeopardizing students' success on NCLEX®. Furthermore, nursing educators may feel confident that properly written multiple choice items can effectively measure higher order thinking (Chenevey, 1988; Gaberson, 1996; McDonald, 2002), although the extent to which such items are represented on multiple choice exams taken by nursing students is questionable (Bosher, 2003; Cross, 2000; Masters et al., 2001). The current reality is that multiple choice exam scores are likely to account for a sizeable proportion of students' course grades, so if students intend to pass a course, they will also be motivated to prepare for exams by using an approach to studying that incorporates effective study tactics.

Measuring Study Approaches and Learning Strategies in Nursing Students

The practice of assessing how well students learn with multiple-choice exams carries over to the assessment of their approaches to learning and studying. Several different "self-report questionnaires designed to assess differences in how students learn and study" (Entwistle & McCune, 2004, p. 326) have been used to investigate approaches

to studying and learning strategies in nursing students. These instruments and the studies

in which they were used are summarized in Table 1.

Table 1

Self Report Questionnaires Used to Measure Approaches to Studying and Learning
Strategies in Studies of Nursing Students

Questionnaires	Studies in Which Questionnaires were Used
Approaches and Study Skills Inventory for Students (ASSIST; Tait, Entwistle, & McCune, 1998)	Mansouri et al. (2006), Iran; Brodersen (2003), U.S.
Revised Approaches to Studying Inventory (RASI; Tait & Entistle, 1996)	Howard, Hayes, Solomonides, & Swannell (2001), U.K.
Approaches to Studying Inventory (ASI; Entwistle & Ramsden, 1983)	Meyer & Dunne (1991), South Africa; Stiernborg, Guy, & Tinker (1997), Australia; Cowman (1998), Northern Ireland, & Republic of Ireland
Lancaster Inventory (LI; Entwistle & Wilson, 1970; Entwistle & Wilson, 1977 as cited in Tait & Entwistle, 1996)	Lapeyre (1992), U.K.; Colgan (1992), Northern Ireland
Learning and Study Strategies Inventory (LASSI; Weinstein & Palmer, 2002; Weinstein, Schulte, & Palmer, 1987)	Chacko & Huba (1991), U.S.; Keane (1993), U.S.; McGeever (1994), U.S.; Peter (2005), U.S.
Survey of Study Habits and Attitudes (SSHA; Brown & Holtzman, 1964)	Haislett, Hughes, Atkinson, & Williams (1993), U.S.
Study Process Questionnaire (SPQ; Biggs, 1987)	Cantwell (1997), Australia; Cantwell & Moore (1998), Australia; Snelgrove & Slater (2003), U.K.
Revised 2-Factor Study Process Questionnaire (R-SPQ-2F; Biggs, Kember, & Leung, 2001)	August-Brady (2005), U.S.; Tiwari et al. (2006), China
Course Experience Questionnaire, modified version (CEQ; Ramsden, 1991).	Gibbs, Lucas, & Spouse (1997), U.K.

Although the instruments listed in Table 1 are all designed to assess aspects of

how students study and learn, they vary in terms of how those aspects are conceptualized

and operationalized. Entwistle and McCune (2004) offer an explanation for the variety of

study approach and learning strategy instruments and comment on the dilemma it poses

for researchers and educators:

> Although these instruments use similar formats and psychometric principles
> (Likert scales), they were developed for rather different purposes, derived from
> contrasting theoretical perspectives, and labeled in different ways. As a result,
> other researchers or university teachers may find it difficult to determine which
> instrument best suits their purpose. (p. 326)

To illustrate the similarities and differences in the aforementioned instruments (See Table

1 presented previously), a description of each instrument follows.

ASSIST

An example of a self-report questionnaire designed to measure approaches to

studying is the *Approaches and Study Skills Inventory for Students* (ASSIST; Tait,

Entwistle, & McCune, 1998). The ASSIST was the instrument used to measure

approaches to studying in this dissertation work. Tait, Entwistle, and McCune (1998)

state the purpose of the ASSIST is:

> …to meet the needs of teaching staff who want to use it to try to identify students
> who are experiencing difficulty with their studies, or who want to investigate the
> ways in which their teaching is influencing their students' learning. (p. 269)

To achieve this purpose the ASSIST measures three constructs: (a) conceptions of

learning, (b) approaches to studying, and (c) preferences for different types of course and

teaching. These scales and their related subscales are presented in Table 2.

The ASSIST evolved from the *Approaches to Studying Inventory* (ASI; Entwistle

& Ramsden, 1983), which evolved from earlier instruments developed by Noel Entwistle,

along with various other researchers, to measure students' motivation and personality

characteristics and their relationship to study methods (Tait & Entwistle, 1996).

Table 2

ASSIST Scales and Subscales

Scales	Subscales
Conceptions of Learning subscales	Learning is remembering things well
	Learning is developing as a person
	Learning is acquiring knowledge
	Learning is using acquired knowledge
	Learning is understanding things for oneself
	Learning is a change in understanding or meaning
Preferences for Different Types of Course and Teaching—Supporting Understanding	Thinking for oneself
	Showing thinking
	Reading beyond requirements
	Challenging books
Preferences for Different Types of Course and Teaching—Transmitting Information	Directed note-taking
	Exams restricted to lecture notes
	Directed reading
	Easy books
Deep Approach	Seeking meaning
	Relating ideas
	Use of evidence
	Interest in ideas
Strategic Approach	Organized studying
	Time management
	Alertness to assessment demands
	Achieving
	Monitoring effectiveness
Surface Apathetic Approach	Lack of purpose
	Unrelated memorizing
	Syllabus-Boundness
	Fear of failure

Over time, conceptions about student learning and studying proposed by Marton

and Säljö (1976a; 1976b) and Pask (1976) were incorporated into what became the ASI

(Entwistle & McCune, 2004; Tait & Entwistle, 1996). Continued revision of the ASI to

reflect emerging research findings resulted in the *Revised Approaches to Studying Inventory* (RASI; Tait & Entwistle, 1996) and eventually the ASSIST. Included in the ASSIST were "additional scales intended to extend the description of studying and reactions to teaching" (Centre for Research on Learning and Instruction, 1997, p. 5).

The additional scales included in the ASSIST incorporate assessment of the extent to which students monitor the effectiveness of their study efforts and their sense of purpose relative to the learning context. Pask's (1976) learning processes (serialist and holist), measured as separate strategies in the ASI, are included within the scale representing the Deep Approach to studying in the ASSIST (Centre for Research on Learning and Instruction, 1997, p. 5; Tait et al., 1998; Entwistle et al., 2000).

Descriptions of LI and ASI, & RASI

Lancaster Inventory. The ASSIST evolved from the *Approaches to Studying Inventory* (ASI) and *Revised Approaches to Studying Inventory* (RASI), both of which evolved from the *Lancaster Inventory* (LI; Entwistle & McCune, 2004). Initial work on the LI was conducted in the U.K. at the University of Aberdeen and reported in 1970 (Entwistle & Wilson, 1970). Subsequent work at Lancaster University (U.K.) was reported in 1977 (Entwistle & Wilson, 1977 as cited in Tait & Entwistle, 1996). The number of items in the LI is uncertain and probably differs over the course of its development. The LI is described in sufficient detail in one of two research reports on nursing students' approaches to studying (Colgan, 1992; Lapeyre, 1992). Lapeyre described the LI as containing 30 items and 8 scales including Achieving, Reproducing, and Meaning Orientations. The Achieving, Reproducing, and Meaning Orientation scales

are conceptually similar to the Strategic, Surface, and Deep Approach scales which appear on more recent instruments that evolved from the LI.

More recent versions of the LI, such as the one described by Lapeyre (1992) incorporate scales that reflect research that was emerging subsequent to the studies at Aberdeen and Lancaster. These scales include Comprehension and Operation Learning Style scales, which are derived from Pask's (1976) conceptions of serialist and holist learning strategies. Also featured are the Versatile Approach and Pathological Symptoms. Students who demonstrate the Versatile Approach use both Operation and Comprehension learning styles in appropriate situations. Pathologies correspond to Pask's conceptions of excessive reliance on either Operation, or Comprehension Learning and tendencies to jump to conclusions (globetrotting) or use of invalid or illogical analogies (improvidence). A final scale, Prediction of Academic Success, is also included in the LI described by Lapeyre. The LI scales reported by Lapeyre are described in Table A2 (Appendix A).

Approaches to Studying Inventory. Data from the Aberdeen and Lancaster studies were subsequently revisited, resulting in the identification of "two different forms of motivation … one which was competitive and self-confident (need for achievement) and another which involved apprehension about assessment (fear of failure)" (Tait & Entwistle, 1996, p. 100). Also resulting from the re-analysis of this data were three unproductive approaches to studying labeled Syllabus-Boundness, Disorganized Studying, and Negative Attitudes. Syllabus-Boundness is defined as restricting one's study efforts exclusively to what is assigned in the course syllabus. Disorganized

Studying involves procrastination and poor time management. Negative Attitudes reflect lack of engagement with course work and attitudes of disillusionment toward higher education (Entwistle, 1975). The fruits of the re-analysis of Aberdeen and Lancaster data combined with ideas generated by other researchers (Marton & Sälö,1976a; 1976b; Pask, 1976; Biggs, 1976) are reflected in the *Approaches to Studying Inventory* (ASI).

The Achieving, Reproducing, and Meaning scales of the LI were retained in the ASI, as were other scales with the exception of Prediction of Academic Success and Versatile Learner (Entwistle & Ramsden, 1983). The Operation and Comprehension Learning approaches and the Pathologies appear to have been subsumed within a Non-Academic Orientation scale in the ASI. As the result of emerging conceptions of intrinsic and extrinsic motivation attributed to Biggs (1976), corresponding motivation-related scales were incorporated into the ASI such that the Intrinsic Motivation subscale was included under Meaning Orientation and Extrinsic Motivation under Strategic Orientation. Ultimately the ASI contained 64 items to which students responded by selecting from among five Likert-type choices ranging from 4—definitely agree to 0—definitely disagree (Entwistle & Ramsden, 1983). The ASI scales are described in Table A3 (Appendix A).

Revised Approaches to Studying Inventory (RASI). The RASI was developed in an effort to reduce the number of items and time demands imposed by the 64-item ASI (Tait & Entistle, 1996). Due to "some uncertainty" as to whether Pask's (1976) comprehension learning and operation learning [were] styles or cognitive processes" (Tait & Entwistle, 1996, p. 103) and the conceptual similarity between these two styles

and two other ASI scales, Relating Ideas and Use of Evidence, the Comprehension and Operation Learning scales and their related pathology scales of Globetrotting and Improvidence were omitted from the RASI. The RASI was eventually reduced to 44 items included the Meaning, Reproducing, and Achieving Orientation scales renamed as Deep, Surface, and Strategic Approaches respectively. This naming scheme is carried over into the ASSIST (Tait, Entwistle, & McCune, 1998). Additional scales on the RASI were Lack of Direction and Academic Self-confidence (Tait & Entwistle, 1996), neither of which were carried over to the ASSIST (Tait et al., 1998). The RASI main scales are listed in Table A4 (Appendix A).

Description of the Learning and Study Strategies Inventory (LASSI)

The LASSI is a self-report instrument that measures student perceptions of their motivation to learn, their learning skills, and the extent to which they monitor and manage their learning progress. The instrument contains 80-items distributed among 10 scales which quantify Anxiety, Attitude, Concentration, Information Processing, Motivation, Selecting Main Ideas, Self-Testing, Use of Study Aids, Test-Taking Strategies, and Time Management. Students respond to LASSI items using a five-point Likert-type scale ranging from "Very much typical of me" to Not at all typical of me" (Weinstein & Palmer, 2002).

The LASSI is intended to diagnose learning and studying strengths and weaknesses and to increase students' awareness of those strengths and weaknesses. Students' scale scores can be compared to the mean item scores for the national norming samples. The LASSI is revised periodically to reflect elimination of items containing

outdated phrases or concepts, advances in technology (e.g. Internet learning resources),

and evolving research on learning. Periodic revision also allows the improvement of the

psychometric properties and updating of national norming data (Weinstein & Palmer,

2002). Each scale of the LASSI is listed and described in Table 3.

Table 3

Learning and Study Strategies Inventory (LASSI) Scales

LASSI Scales	Description
Attitude	Measures attitude about school and motivation to succeed.
Motivation	Measures acceptance of responsibility to complete work.
Time Management	Measures ability to organize time and stay on schedule.
Anxiety	Measures amount of tension or worry when faced with a task.
Concentration.	Measures ability to focus on and maintain attention on a task
Information Processing	Measures ability to paraphrase, summarize, generalize, and apply information.
Selecting Main Ideas	Measures ability to identify key points for future application.
Study Aids	Measures extent to which student can use study aids provided in texts (italicized or bold text) and create their own study aids.
Self-testing	Measures extent to which student reviews content, asks questions about, and tests own understanding of it.
Test Strategies	Measures test-taking and test preparation strategies.

SPQ

The Study Process Questionnaire (SPQ) was developed in Australia during the

late 1970s by Biggs (1987a; 1987b as cited Biggs, Kember, & Leung, 2001). It has

undergone periodic revision to reflect the changing demographics of college students

population and their educational contexts (Biggs et al., 2001). Norms were initially

established for the SPQ, but were later dropped because they were considered "unnecessary" due to the heterogeneity of student populations and institutions of higher education. It was felt that students' SPQ results should be compared only within the students' unique educational contexts (Biggs et al.). Like the ASSIST and its precursors, the SPQ evolved from student approaches to learning (SAL) theory and consequently incorporates the constructs of Deep and Surface Approaches (Marton & Säljö, 1976a; 1976b) and notions of holist and serialist study strategies (Pask, 1976).

The SPQ features 42 items distributed among three main scales. The three main scales, Deep, Surface, and Achieving are conceptually similar to the Deep, Surface Apathetic, and Strategic Approach scales in the ASSIST (Entwistle & McCune, 2004). Each scale has a "motive" and a "strategy" subscale such that there are six subscales: Deep Motive, Deep Strategy, Surface Motive, Surface Strategy, Achieving Motive, and Achieving Strategy.

When completing the SPQ, students use a 5-point Likert-type scale consisting of the following responses: Very much typical of me, Fairly typical of me, Somewhat typical of me, Not very typical of me, and Not at all typical of me (Biggs, 1987). The SPQ scales and their descriptions are presented in Table 4.

Table 4

Study Process Questionnaire (SPQ) Scales

SPQ Scales	Descriptions
Surface motive	Extrinsic motivation to complete a task in order to meet requirements. Personal meaning is not a consideration.
Surface strategy	Memorizing.
Deep motive	Intrinsic motivation to find meaning in task. Personal meaning and interest are primary considerations.
Deep strategy	Reading widely, even beyond requirements; making linkages between past knowledge and present information; theorizes and generalizes.
Achieving motive	Motivated by rewards, such as high grades and doing better than others. May use either Deep or Surface strategies to achieve goal.
Achieving strategy	Manages time, meets deadlines.

Revised 2 Factor SPQ

The recently updated SPQ, called the Revised 2-Factor Study Process

Questionnaire (R-SPQ-2F; Biggs et al., 2001), has only 20 items, which are distributed

proportionately among 2 main scales, Deep and Surface Approach. Within each main

scale are 2 subscales, one containing 5 items that represent a motive, and another

containing 5 items that represent a strategy. Students respond using a 5-point Likert-type

scale consisting of choices ranging from "always or almost always true of me" to "only

never or only rarely true of me." The choice of "always or almost always" is scored as 5

points while "never or only rarely" is scored as 1 point (Biggs et al., 2001, p.148). Table

A5 (Appendix A) lists and defines the main scales and subscales of the R-SPQ-2F

numbered according to their order of appearance in the instrument.

SSHA

The *Survey of Study Habits and Attitudes* (SSHA; Brown & Holtzman, 1964) is a norm-referenced self-report instrument that measures on four scales the strength of study skills and desirable study-related attitudes. Study skills are quantified by two subscales: Work Methods and Delay Avoidance. Work Methods quantifies the use of effective study methods. Delay Avoidance quantifies the extent to which the respondents complete work on time. Attitudes are quantified with two additional subscales: Teacher Approval, which relates to having a positive opinion of the teacher, and Educational Acceptance, the amount of satisfaction with educational objectives.

Work Methods and Delay Avoidance scores are summed to achieve a "Study Habits" score. The sum of Teacher Approval and Educational Acceptance produces a Study Attitudes score. A Study Orientation score, the sum of Study Habits, Study Attitudes, and Study Orientation, is also calculated. Respondents complete 75-100 items (depending on version) by selecting from among five choices on a Likert-type scale ranging from "Rarely" to "Almost Always". Respondents are ranked on a percentile scale that is referenced to the scores of successful students attending four-year colleges and universities (Brown & Holtzman, 1964). The scales of the SSHA are listed and defined in Table 5.

Table 5

Survey of Study Habits and Attitudes (SSHA) Scales

SSHA Scales	Definition
Work Methods (WM)	Use of appropriate processes and methods to complete work.
Delay avoidance (DA)	Ability to organize and complete work on time.
Study Habits (SH)	Sum of WM and DA scores
Teacher approval (TA)	Level of comfort and attitude toward teachers.
Educational acceptance (EA)	Perceived relevance of education to student's future.
Study Attitudes (SA)	Sum of TA and EA scores
Study Orientation score.	Sum of SH and SA scores

CEQ

The *Course Experience Questionnaire* (CEQ) was designed as a performance indicator for educational programs in Australian institutions of higher learning (Ramsden, 1991). The use of a modified version of the CEQ, the Module Experience Questionnaire (MEQ) has been reported in one study of nursing students (Gibbs, Lucas, & Spouse, 1997). Ramsden (1991) describes the development of the CEQ but precise details about the actual number of items were not provided in his report, though there were indications that the CEQ was intended to "be no longer than 30 items" (Ramsden, ¶20) and no longer than a single sheet of paper. Though specific details were sketchy, the MEQ used by Gibbs et al. appears to have featured 25-30 items distributed among five scales: Good Teaching, Clear Goals, Appropriate Workload, Appropriate Assessment, and Emphasis on Independence. The initial CEQ featured a 5-point Likert-type response scale ranging from "definitely agree" to "definitely disagree" (Ramsden, ¶21). During its development, a trial-version of the CEQ was administered in conjunction with the ASI (Ramsden, ¶31),

but specific details about the number of items on the trial version were not described

(Ramsden). The scales of the MEQ described by Gibbs et al. are listed and defined in

Table 6.

Table 6

Modified Course Experience Questionnaire (MEQ)

MCEQ Scale Descriptions	Definition
Good Teaching	Extent to which teacher motivates students, provides feedback, is understanding, interesting, and able to improve student's understanding.
Clear Goals and Standards	Extent to which it was made clear what was expected of student.
Appropriate Workload	Extent to which amount of work and time allowed to complete it was reasonable.
Appropriate Assessment	Extent to which students were tested on facts they had to memorize.
Student Independence	Extent of free choice and restrictions on learning activities.
Deep and Surface Approach	Extent to which student intended to understand information or merely memorize it.

Study Tactics

The term *study tactics,* defined in Chapter 1, refers to psychomotor activities or

"cognitive events" (Pintrich, 2004, p. 391) that students use intentionally in order to

learn. A large, but not necessarily comprehensive taxonomy of study tactics is presented

in Table 7. These tactics were gleaned from the work of Hadwin et al. (2001) and

Weinstein and Mayer (1986). According to an older systematic review conducted by

Hadwin and Winne (1996) with the exception of concept mapping, empirical evidence

supporting the effectiveness of most of the study tactics listed is scarce. A recent review

of concept mapping in nursing education indicates that the study tactic has been

consistently associated with desirable academic outcomes including better course grades

and improved critical thinking (Clayton, 2006). Concept mapping is the most extensively

researched study tactic in nursing education.

Table 7

Taxonomy of Study Tactics

Tactic Category	Examples of Study Tactics
Repeating, rehearsing, and practicing content	Repeating items that go together in a list or group; rewriting lecture notes or information in textbook; rereading notes or text; talking to self, reciting lists; explaining concepts to others; using mnemonics for memorization.
Selecting important ideas or concepts from content	Underlining, highlighting, or marking lecture notes or text in some way to indicate importance of concepts; ignoring or discarding content not perceived as relevant or important.
Organizing and structuring content	Rewriting lecture notes, creating sets of notes for studying; arranging content into outlines, categories, or lists; creating charts, tables, or mnemonics; rewriting study notes in condensed form; discarding or setting aside note cards or notes as content is learned.
Identifying relationships and making conceptual links within content	Annotating lecture notes or text to indicate ideas that come to mind or relationships to prior knowledge; forming mental images by using related concepts in a sentence or drawing; thinking about or imagining about relationships between concepts; creating analogies, concept maps, or case examples.
Evaluating understanding of content	Creating and answering practice exam questions; quizzing self or being quizzed by others; paraphrasing concepts and explaining content to others; anticipating and practicing essay exam items.
Collaborating with others to learn content	Studying and working with others (tutor, peers, instructors) to learn content.

It is important to note that the terms *study tactics*, *learning strategies* and *study*

strategies are sometimes used interchangeably. For example, learning strategies, as

defined by Weinstein and Mayer (1986) are "behaviors and thoughts that a learner

engages in during learning and that are intended to influence the learner's encoding process" (p. 315). *Encoding process* is defined as "internal cognitive processes during learning such as how the learner selects, organizes, and integrates new information" (p. 316). Weinstein and Mayer suggest that "the use of particular learning strategies during learning can affect the encoding process, which in turn affects the learning outcome and performance" (p. 316). In other words, the use of study tactics is thought to affect the extent to which content is incorporated into cognitive structure and in effect, *learned*, which subsequently affects academic success. Weinstein's and Mayer's conception of learning strategy is congruent with that of Hadwin & Winne (1996), and Hadwin et al. (2001), but these researchers prefer the term "study tactic" and "reserve the term *strategy* to refer to occasions when students define their own short-term (local) goals and overall (global) goals for studying and select and coordinate alternative study tactics they expect will be helpful in achieving those goals" (Hadwin & Winne, 1996, p. 694). Thus, tactics are "microlevel grain" aspects of the "larger grain" notion of study strategies (Pintrich, 2004, p. 391). For the purposes of this dissertation work, the term *study tactic* will be used and conceptualized as a micro-grain aspect of the larger-grain concept of approaches to studying.

Nursing Education Settings and Approaches to Studying

Research on approaches to studying and learning in samples of nursing students has been conducted in multiple countries and in varied education settings. Research involving U.S. nursing students' approaches to studying and learning has been conducted in associate degree (Chacko & Huba, 1991) and bachelor's degree (i.e. BSN) programs

(August-Brady, 2005; Brodersen, 2003; Haislett, Hughes, Atkinson, & Williams, 1993; Keane, 1993; McGeever, 1994; Peter, 2005). BSN students have also been subjects in studies conducted in Iran (Mansouri et al., 2006), China (Tiwari et al., 2006), Australia (Stiernborg, Guy, & Tinker, 1997), and the U.K. (Lapeyre, 1992). Studies of students enrolled in programs described as granting a diploma in higher education (e.g. DipHE Nursing) have been conducted in Australia (Cantwell, 1997; Cantwell & Moore, 1998), the U.K. (Gibbs et al., 1997; Howard, Hayes, Solomonides, & Swannell, 2001; Lapeyre, 1992; Snelgrove & Slater, 2003), Northern Ireland (Colgan, 1992; Cowman, 1998), and South Africa (Meyer & Dunne, 1991). In the U.K. DipHE programs are described as a "three-year course [that] is taught in some 50 universities throughout the United Kingdom" (Howard et al., 2001, p. 921). Nursing students enrolled in what were described as a traditional hospital affiliated apprentice-style nursing programs in the Republic of Ireland have also served as subjects in research on nursing students' approaches to studying (Cowman, 1998).

Pre-licensure nursing programs in the U.S. are similar to pre-registration systems of education in other countries in that they take place in post-secondary educational institutions and offer academic degrees and diplomas. In order to establish the educational contexts in which research on nursing students' approaches to studying and learning has taken place, and to enable comparison of the various foreign and U.S. education systems, those systems in relevant countries will be described.

Nursing Education in the U.S.. As noted previously in this chapter, in the U.S. there are several educational paths to becoming a Registered Nurse (RN). Pre-licensure

nursing education in the U.S. is offered primarily in institutions of higher education that offer two-year associate and four-year baccalaureate degrees. A smaller number of hospital-based apprenticeship-style programs, which were in the past the only type of formal nursing education in the U.S. (Stewart, 1943), continue to grant diplomas that qualify graduates to take the national RN licensure exam (Lusk, Russell, Rodgers, & Wilson-Barnett, 2001). The BSN degree is attainable with 4-5 years of study in a college or university. BSN programs provide students with a liberal arts education in addition to theoretical and clinical foundations within the nursing major. The BSN degree is considered the minimum requirement for professional nursing practice and qualifies graduates to practice in all health care delivery settings. The ADN degree requires 2-3 years of study in a community college. Diploma programs are situated in hospitals and take about 3 years to complete. Diploma and ADN programs emphasize technical skill acquisition, which qualify graduates to practice in hospitals and other in-patient settings (Johnson & Johnson Services, Inc., n.d.; USDL—BLS, 2006).

Nursing Education in Other Countries. China's nursing education system offers students even greater variety in program selection than the U.S. In China, 95% of nurses obtain pre-licensure education in "health schools," many of which are affiliated with hospitals (Chan & Wong, 1999, p.1301). Health schools admit junior and senior high school graduates to programs of study that range from two to four years in length. Senior high school graduates are also eligible to apply to three-year diploma-granting university programs or five-year baccalaureate-degree programs. In Hong Kong students can choose from a different variety of nursing programs including hospital-based two-year certificate

and three-year diploma programs as well as three-year university diploma and four-year university degree programs (Chan & Wong, 1999).

In Iran, after completing 12 grades of general education, students take the National University Entrance Examination (Salsali, 1999), which determines the career path they will pursue in the university system (P. Mansouri, personal communication, April 17, 2007). The nursing education track "consists of 3 years of theoretical education in which courses are taken in the school of nursing and 1 year of clinical practice in hospitals" (Salsi, 1999, p. 190). Four years of study results in a bachelor's degree in nursing and qualifies graduates to take the national licensure exam that is "the equivalent of RN licensing examination in North America" (Salsi, p. 190). Nursing educators in Iran consider their system similar to baccalaureate nursing education in the U.S. (P. Mansouri, personal communication, April 17, 2007). For example, at Shiraz University first year students take anatomy and physiology and other courses similar to those taken by first year Allen College students; course work is also similar during the remaining years in each program (P. Mansouri, personal communication, April 17, 2007).

In the U.K, nursing programs are situated entirely in the university system, but students may choose to study four years to earn bachelor's degrees or three-years to obtain diplomas (Lusk et al., 2001). The majority of university-based nursing programs award a diploma in higher education, which leads to registration in one of four nursing specialty areas: Adult, Mental Health, Child, or Learning Disabilities (Lusk et al., p. 200). Diploma and degree programs in the U.K. differ "in that admission criteria are less rigorous and studies are not as academic or indepth as in degree programs" (Lusk, et al.,

p. 200). Prior to 2002, nursing education in the Republic of Ireland was quite similar to the U.K. in that schools of nursing collaborated with universities to grant diplomas which qualified graduates to begin careers in general, mental handicaps, or psychiatric nursing. An additional year of study was required to obtain a bachelor's degree in nursing (McCarthy, 1999). Since 2002, all nursing programs in the Republic of Ireland grant only 4-year baccalaureate degrees (Fealy, 2002; Watson, 2003).

Nursing education in Australia and South Africa is also similar to the U.K. Nursing programs in Australia are situated entirely in universities where students can earn either a three-year basic bachelor's degree, or a four-year honors bachelor's degree (Lusk et al., 2001; Sellers, 2002). Nursing education in South Africa can be completed at four-year diploma-granting nursing colleges or students can earn a bachelor's degree by studying nursing at a university (Ehlers, 2002). In South Africa, 90% of RNs have diplomas while the rest have degrees (Kyriacos, Jordan, & van den Heever, 2005, p. 92).

<u>Previous Research on Approaches to Studying
and Learning in Nursing Students</u>

Previous research suggests differences in the ways successful and unsuccessful nursing students approach studying. Successful students, as indicated by higher course grades or higher GPAs, demonstrate higher Strategic and Deep Approach scores.

Surface Approach scores have been shown to correlate negatively with academic success and course grades (Howard et al., 2001; Meyer & Dunne, 1991; Snelgrove & Slater, 2003; Stiernborg et al., 1997) and GPA (Snelgrove & Slater). Conversely, students with higher Strategic Approach scores tend to have higher GPAs (Brodersen, 2003;

Mansouri et al., 2006; Snelgrove & Slater) as do students with higher Deep Approach scores (Brodersen, 2003; Cantwell & Moore, 1998; Snelgrove & Slater).

Although approaches to studying may affect academic achievement, learning context is widely believed to affect approaches to studying. Nursing education researchers are in general agreement that when students have real experiences to which they can relate course content, Deep Approaches are promoted (Brodersen, 2003; Colgan, 1992; Cowman, 1998; Mansouri et al., 2006; Meyer & Dunne, 1991; Snelgrove & Slater, 2003; Gibbs et al., 1997). It is also generally agreed that courses with heavy workloads and exam-style assessment most-likely foster Surface Approaches to studying (Colgan; Brodersen; August-Brady, 2005), but encourage a Strategic Approach as well (Cowman; Brodersen).

Whether or not study approaches change over time in educational programs is not certain. Some studies indicate that students who have been in their nursing programs the longest adopt primarily a Surface Approach (Cantwell, 1997; Colgan, 1992) while others (Stiernborg et al., 1997) demonstrate a move toward the Strategic Approach as time passes. Stiernborg et al. suggest that students may become tired of being in school and desire to start their careers, so they alter their study approaches in order to do whatever is necessary to successfully meet course demands. In contrast, others report student transition to the Deep Approach over time (Brodersen, 2003; Howard et al., 2001; Mansouri et al., 2006; Tiwari et al., 2006), suggesting that students become more interested as they progress through their program of study and are exposed to more

clinical experiences to which they can apply what they have learned in the didactic component of their classes.

Other factors related to approaches to studying in nursing students include age, sex, type of nursing program, and specific learning activities. Older students are more likely to adopt Deep and Strategic Approaches, regardless of year in the program (Brodersen, 2003; Howard et al., 2001), while younger students demonstrate preferences for Surface Approaches (Howard et al., 2001). In one study males demonstrated higher scores on the Deep Approach subscale, Use of Evidence (Stiernborg et al., 1997). Cowman (1998) reported greater use of Deep-related approaches to studying by students enrolled in apprenticeship-style nursing programs compared to students in baccalaureate programs, but Lapeyre (1992) found no differences between students in diploma or degree-granting programs.

The effect of student-centered learning interventions on approaches to studying and learning has not been studied extensively in nursing students, but initial inquiry suggests that problem based learning (PBL; Tiwari et al., 2006) and concept mapping (August-Brady, 2005) promote a Deep Approach to learning.

Gaps in Knowledge about Approaches Studying
in Baccalaureate Nursing Students

There is a growing body of research on nursing students' approaches to studying, however, with the exception of studies reporting the effects of PBL (Tiwari et al., 2006) and concept mapping (August-Brady, 2005), there is virtually no literature on the specific study tactics used by nursing students once they become involved in the physical and

mental act of studying. Furthermore, self-report instruments designed to assess approaches to studying do not contain items that assess specific study tactics.

There is no literature on self-directed study tactics used by nursing students. Researchers who have used self-report instruments to study learning in nursing students have not done so with the purpose of describing study tactics. The LASSI, SPQ, R-SPQ-2F, and the ASSIST-family of instruments are most often cited in research on studying and learning in nursing students (See Table 1 presented previously). The LASSI contains many items that assess the use of specific study tactics within its Self Testing, Study Aids, and Information Processing scales, but because study tactics have not been of interest to previous nursing education researchers, information about the specific tactics nursing students use when they study is not reported (Chacko & Huba, 1991; Keane, 1993; McGeever, 1994; Peter, 2005).

Nursing education researchers who have studied learning in nursing students typically report summary statistics only for an instrument's scale or subscale scores, rather than statistics describing student responses to individual items on an instrument. Furthermore, no information is provided to indicate the wording or content of individual items that comprise scales or subscales. As a result, when instruments that assess study tactics are used in studies on learning in nursing students, it is impossible to tell what sort of tactics students employ independently when they study. Consequently, research is needed to describe the specific study tactics used by nursing students when they study.

Nursing educators' interest in describing nursing students' approaches to study seems to have been primarily a foreign movement, whereas greater interest in learning

styles and study strategies is apparent in the U.S. nursing education literature. The divergent paths taken by nursing education research in U.S. and foreign countries with regard to studying and learning very likely reflect the regional research interests of educational psychologists. In other words, education research on student learning in the U.K. and Australia has traditionally emphasized approaches to studying, while learning styles (Thompson & Crutchlow, 1993) and study strategies (Chacko & Huba, 1991; Keane, 1993; McGeever, 1994; Peter, 2005) have been the trajectory of inquiry on learning in the U.S. Consequently little is known about nursing students' approaches to studying in the U.S. (August-Brady, 2005). Therefore, more research is needed to describe approaches to studying in U.S. nursing students.

Given the importance of effective studying to learning and academic achievement, and the importance of facilitating the academic achievement of nursing students in order to ameliorate the U.S. nursing shortage, the purpose of this dissertation work was to describe how baccalaureate nursing students at a small U.S. health sciences college approached the task of studying and to compare their approaches to studying to measures of academic success. Since the ASSIST, the instrument used to measure study approaches in this dissertation work, contains no items that assess specific study tactics, a second purpose of this study was to interview students representing various degrees of academic success to ascertain the specific tactics they use to study course content. Finally, an additional purpose of this study was to examine the psychometric properties of the ASSIST to determine its validity and reliability in U.S. nursing students.

CHAPTER 3

STUDY METHODS

<u>Overview</u>

In this chapter the methods used to collect and analyze data are described as are

the study setting and the samples of students that were studied. The precautions taken in

order to protect the rights of human subjects are explained. The accessible population is

described and compared to the sample. Specifically, participants are compared to non-

participants in order to determine the extent to which the accessible population was

represented by the sample. The instruments that were used to collect data are described as

are the procedures used to analyze quantitative and qualitative data.

<u>Design</u>

The design of this study was both quantitative and qualitative. The quantitative

method was non-experimental, descriptive-correlational. Both approaches to inquiry were

needed because "qualitative studies provide insights into the dynamics of individual

studying and development" (Entwistle & Peterson, 2004, p. 418) that are not captured

with quantitative measures of approaches to studying. A standardized self-report measure

of approaches to studying, the ASSIST (Appendix B), was administered to nursing

students in four required courses, but the ASSIST did not address the research questions

about students' specific learning contexts and specific study tactics. In order to obtain

more detailed information about these variables, interviews were conducted with a small

sample of students who represented three levels of academic achievement.

Setting

The study took place at Allen College, a small, private, not-for-profit, health sciences college in Waterloo, Iowa. Allen College offers Bachelor and Master of Science degrees in nursing as well as an Associate Degree in radiography technology. There were 364 students enrolled at the college during the 2004-2005 academic year when the study was conducted (Allen College, 2004). To provide its students with general education instruction, Allen College partners with University of Northern Iowa (UNI) and Wartburg College, located within a 30 mile radius of the Allen College campus. UNI is a state-supported institution with an enrollment of approximately 14,000 students, located in Cedar Falls, Iowa. Wartburg, located in Waverly, Iowa, is a private Lutheran Church affiliated institution with an enrollment of approximately 1,700 students. Both UNI and Wartburg offer many academic degrees and special programs.

Most of the Allen College students (82%) were enrolled in the BSN program and most were female (95%) and white, non-Hispanic (97%). Racial/ethnic representation of the remaining 3% of the Allen College population consisted of Blacks (1%), Hispanics (1%), and Asians (1%; National Center for Education Statistics, 2005).

The mean high school GPA of first time freshmen was 3.28. Most of the students (97%) ranked in the top 50% of their high school graduating class; 52% ranked in the top 25% of their high school graduating class. The mean ACT score for first-time freshmen was 20.7 (Allen College, 2004), which is comparable to the mean ACT score of 20.8 for college students nationally in 2003 (20.9 in 2004), but slightly lower than the mean ACT score of 22.0 for all students in Iowa (ACT, 2007, p. 7). The graduation rate of 67% for

Allen College BSN students (National Center for Education Statistics, 2005) compares favorably to National graduation rate of 57% for four-year private institutions (ACT, 2005).

The retention rate for first-time freshmen who started in the Allen College BSN program during the 2003 fall semester was 74% (Allen College, 2004), which compares favorably to national drop-out rates for private institutions that have liberal admission selectivity (e.g. ACT score range of 18-21) and a retention rate of 63% (based on a drop-out rate of 37%; ACT, 2003). Among students who dropped out of Allen College, career change was the most commonly given reason for leaving (29%), followed by reasons unspecified (22%). Although it ranked third among reasons for attrition, academic suspension (19%) was still an important source of attrition for all BSN among BSN students who were first-time freshman during the fall of 2003. It is not known exactly when students are at greatest risk for academic suspension, although most withdrawals occured during the first academic year (60%) or the second (31%) academic year (Allen College, 2004).

Students in four required Allen College courses, Anatomy and Physiology I (API), Anatomy and Physiology II (AP II), Pathophysiology (Patho), and Nursing Care of the Adult Client (NCAC) were provided the opportunity to participate in the study. Patho and NCAC are always taught by Allen College faculty on the Allen College campus, while Anatomy and Physiology courses are taught at the UNI and Wartburg College by their respective faculty. During the semester in which this dissertation study took place, all students were enrolled in API and APII at UNI.

Protection of Human Subjects

The study was approved by human subjects review committees at Allen College and the University of Northern Iowa. Students were asked to read and keep a cover letter that accompanied the ASSIST. The cover letter explained the purpose, risks, and benefits of the study. In addition, the letter indicated that students were in no way obligated to participate in the study and that their participation or decision not to participate was completely independent of course requirements. Students were invited by letter to participate in an interview at the completion of the course in which they completed the ASSIST. Students who agreed to be interviewed signed a consent form in which the purpose, risks, and benefits of the interview were described. The consent also assured students of their right to withdraw or refuse participation without penalty. Students were provided copies of their signed consent form. Original consent forms will be kept in a locked storage area until five years after the completion of data analysis in accordance with the Midwest Nursing Research Society (2002) *Guidelines for Scientific Integrity*.

Sampling

A convenience sample of undergraduate nursing students completed the ASSIST. All students enrolled in Pathophysiology (Patho), Anatomy and Physiology I (API), APII, and Nursing Care of the Adult Client (NCAC) were offered the opportunity to participate. Students in API, APII and Patho were surveyed because failure rates for Allen College students are higher in those courses than other courses in the BSN program of study, whereas failure rates in nursing courses are near zero. For example, the failure rate in AP I and AP II was 31% and 27% respectively for the fall 2004 semester. The failure rate

was lower in Pathophysiology at 18%, but still considerably higher than the failure rate for Applied General Chemistry of 8% and Microbiology of 5%. No students failed NCAC.

API, APII, Patho, and NCAC are 4-credit semester hour courses that all feature lecture-style didactic components and, with the exception of Patho, include a clinical or laboratory application component. The amount of time spent in lecture and clinical or laboratory for each course is described in Table 8.

Table 8.

Lecture and Lab Time for Courses in Which the ASSIST was Distributed

Course	Lecture Time per Week (Minutes)	Clinical or Lab Time per Week (Minutes)
Anatomy & Physiology I	150	110
Anatomy & Physiology II	150	110
Pathophysiology	110	0
Nursing Care of the Adult Client	110	360

After the semester ended, final grade percentages were obtained from the professors for each course in which students completed the ASSIST in order to determine academic success and identify students who would be invited to participate in an interview about their study tactics. It was decided that 100 students who had completed the survey would be invited to interview in hopes of recruiting 10-15 students representing high, medium, and low academic success. All students who received failing grades and all students who received grades of A- or A were invited to interview.

Representing the extremes of academic achievement were 48 students, 27 who received failing grades of C-minus or lower and 21 who earned an A-minus or A. To achieve an interview invitation list of 100, an additional 52 students were selected randomly from among the 126 students who received grades ranging from C to B-plus. Interview invitations accompanied by interview consent forms were distributed to the selected students' Allen College mailboxes. Students indicated willingness to interview by calling, e-mailing, or returning the signed consent form, upon which they were contacted to establish an interview time.

<div align="center">Comparison of Population, Non-Participants, and Sample</div>

The accessible population was 192 students who were enrolled in API, APII, Patho, and NCAC. Only 18 students declined to complete the ASSIST resulting in a sample of 174 participants and a survey response rate of 91%. Characteristics of the accessible population, non-participants, and study sample are presented in Table A6 (Appendix A).

Comparison of Participants and Non-participants

Compared to non-participants, students who completed the ASSIST differed significantly in age, cumulative GPA, cumulative ACT score, and course grade percentage. Independent t tests were calculated to achieve two-tailed statistics representing comparisons between participants and non-participants for ratio level data. These statistics, along with 95% confidence intervals are reported in Table 9.

The proportion of students who failed the course for which they completed the ASSIST was significantly higher for non-participants than for those who completed the

ASSIST (χ^2 with continuity correction = 12.933, df = 1, p < 0.001). Students who

declined to complete the ASSIST were all female, but the proportion of males and

females who did not complete the ASSIST was not significantly different (χ^2 with

continuity correction = 0.320, df = 1, p = 0.571).

Table 9

Significant Differences between Participants and Non-participants in Age, GPA, ACT, and Grade Percentages

Variable	t	df	p	M difference	95% Confidence Interval	
					Lower	Upper
Age [a]	4.840	155.04	.000	2.736	1.619	3.852
GPA	2.293	181.00	.023	0.247	0.034	0.459
ACT Score	1.988	171.00	.048	1.483	0.010	2.955
Grade percentage	3.690	190.00	.000	9.454	4.400	14.508

[a] Levene's test for unequal variances was statistically significant for group comparison of age, $F = 7.55$, p = .007, so the t statistic for unequal variances is reported.

Since participants and non-participants differed significantly in age, cumulative

GPA, cumulative ACT score, course grade percentage, and course success (i.e., passing

or failing), forward stepwise logistic regression was conducted to identify which of these

variables predicted whether or not students completed the ASSIST. Logistic regression

generated a single predictor model consisting only of course success. The -2 Log

Likelihood was 99.41 (χ^2 = 9.83, df = 1, p = .002). A -2 Log Likelihood of zero indicates

perfect model fit; low -2 Log Likelihoods are desirable, but in this case the statistics is fairly high (Mertler & Vannatta, 2002, p. 319). Chi square represents the differences between the model and the constant. In this case, Chi square is statistically significant indicating that the model is a better predictor of participation than is the constant (Munro, 2005, p. 311). The model correctly classified 89.6% of the students as participants or non-participants, which indicates strong accuracy. Regression coefficients are displayed in Table 10.

Table 10

Logistic Regression Coefficients

Predictor	B [a]	Wald [b]	*df*	*p*	Exp (B) [c]
Course success: Passed or Failed course	-1.703	10.200	1	.001	.182
Constant	2.725	55.732	1	.000	15.250

[a] B represents the un-standardized regression coefficient and the effect of course success on participation. (Mertler & Vanatta, 2002, p. 320). [b] Wald is a measure of significance for B. The degrees of freedom and probability relate to the Wald statistic. [c] Exp (B) is an odds ratio, which is the probability of completing the ASSIST (participating) divided by the probability of not participating. It indicates the chances of a student completing or not completing the ASSIST given a one unit change in course success (Munro, 2005, p. 312).

The Wald statistic (Table 10) indicated that course success significantly predicted whether or not students completed the ASSIST, but the odds ratio is low. The odds ratio, Exp (B) was achieved by dividing the probability that students would complete the ASSIST by the probability that they would not complete it (Mertler & Vannatta, 2002, p. 318). The odds ratio indicates that if course success increased by one unit (from failed to

passed), participation would increase by 0.182, which suggests a fairly small increase in the likelihood of participating (Munro, 2005, p. 312). Thus, although course success was a significant predictor of participation, it was not a strong predictor.

<div align="center">Description of Survey Sample</div>

There were 174 participants,163 females (93.7%) and 11 males (6.3%). Their characteristics are described in Table 11. ACT scores were not available for all participants. Some participants were in their first semester at Allen College and therefore had not established a baseline GPA at the time of the study.

Table 11

Characteristics of Participants

Variables	*Lowest to highest*	*Mdn*	*M*	*SD*
Age (N=174)	18.00-55.00	21.00	22.74	6.56
GPA (N = 165)	2.18-4.00	3.19	3.19	0.43
ACT score (N =156)	12.00-31.00	22.00	21.72	2.98
Hours employed per week (N =171)	0-40.00	12.00	13.05	11.50
Hours studying for course per week (N = 170)	0-15.00	5.00	5.18	2.68
Overall course performance rating (N = 174)	1.0-10.00	7.50	7.00	1.85
Course grade percentage (N=174)	41.64-93.80	80.24	78.99	10.24

Note: N is less than 174 for some variables because data was not available for every variable.

The average age of students in the sample was 23 years (median = 21, mode = 20). A majority of the students were employed (N = 121, 69.5%). Among those who were employed, over 50% were working 17 or more hours per week. Some participants did not

report employment hours (N = 3). Table 12 presents specific employment statistics for the sample.

The demographic characteristics of this sample are dissimilar to the characteristics of U.S. undergraduate students in general. The most recent data available from the National Center for Education Statistics (NCES) indicates that "43 percent of 1999-2000 undergraduates were age 24 and above, and of those students 82 percent worked while enrolled" (Wirt et al., 2004, p. 82).

Table 12

Employment Statistics

Hours Worked Each Week	*N*	%
1- 8	19.0	15.7
9-16	37.0	30.6
17-32	56.0	46.3
33 or more	9.0	7.4

Participants completed the ASSIST while studying API, APII, Patho, or NCAC. Participants were full time students enrolled in 12 or more credit hours at the time of the survey, but were asked to complete the ASSIST in reference to the specific course in which it was administered. API and APII are typically taken during the first and second semester of the nursing program. Successful completion of API and APII permits students to take Patho during the second year. Taking NCAC during the third year is

contingent upon passing Patho. The highest failure rates occurred for API and Patho. The

numbers of students enrolled in, and failing each course are presented in Table 13.

Table 13

Number of Students Enrolled in and Failing each Course

	Enrolled (N=174)		Failed (N= 29)	
Course	N	%	N	%
API	58.0	33.3	16.0	9.2
APII	15.0	8.6	2.0	1.1
Patho	65.0	37.4	11.0	6.3
NCAC	36.0	20.7	0	

When data collection took place, exactly half (N = 87) of the participants were

enrolled in *AC:105 College Transition* (AC105), a required, one credit hour Internet

course that was intended to introduce first-year students to specific aspects of the Allen

College educational context, including (a) using the Internet course management system

for on-line course work, (b) using American Psychological Association (APA) editorial

style, (c) preparing a portfolio as evidence of Allen College program outcome

achievement, and (d) using academic success strategies for note-taking, reading,

listening, and test-taking. The course had only just been initiated the semester during

which this study was conducted as part of a broader undergraduate nursing program

curriculum change initiative. Students who are required to take AC105 are also likely to

be enrolled in API and API. Some students transfer to Allen College with AP credit and

end up taking Patho concurrently with AC105. Over half of the participants enrolled in AC105 were concurrently enrolled in API (N = 51, 58.6%). The rest of the participants who were enrolled in AC105 were concurrently taking Patho (N = 24, 27.6%) and APII (N = 12, 13.8%).

The timing of this dissertation work and the initiation of AC105 was coincidental and not within this researcher's control, but it was acknowledged that the portion of AC105 that covered academic success strategies for note-taking, reading, listening, and test-taking could potentially have influenced the approaches to studying and study tactics reported by students in this dissertation study. Thus, the ASSIST survey was modified to include an item intended to collect data that could be used to test statistically whether or not there was a relationship between AC105 students' approaches to studying and their academic success. Specifically participants were asked to rate on the demographic portion of the ASSIST the extent to which AC105 had changed their approach to studying. In addition the mean study approach scale scores of students AC105 were compared to those of students who were not in AC105.

There were no significant differences in mean study approach scale scores between students who were enrolled in AC105 and those who were not enrolled at the time they completed the ASSIST (See Table 14). Student ratings of the extent to which their studying had changed as a result of AC105 indicated that most students (N = 65, 74.7%) attributed to AC105 "no change at all" in the way they studied, while a smaller proportion (N = 22, 25.3%) indicated that the way they studied had "changed a little" as a

result of the course. No participants reported that their studying had "changed a great

deal."

Table 14

Comparison of Study Approaches between Students Who Were and Were Not Enrolled in AC105

Approach Scales and AC105 Enrollment Status	M	SD	T^a	p	95% Confidence Interval	
Deep Approach						
Enrolled in AC:105	3.67	0.55	0.402	.688	-0.13	0.20
Not enrolled in AC:105	3.64	0.53				
Surface Apathetic Approach						
Enrolled in AC:105	2.97	0.66	-0.59	.555	-0.24	0.13
Not enrolled in AC:105	3.03	0.59				
Strategic Approach						
Enrolled in AC:105	3.85	0.54	0.83	.409	-0.10	0.24
Not enrolled in AC:105	3.78	0.59				

[a] degrees of freedom = 172.

A significantly greater proportion (69%) of participants who failed the course for

which they completed the ASSIST were concurrently enrolled AC105 (χ^2 = 5.007, df = 1,

p = 0.025). The ASSIST was completed for API by 55% of the students who failed; 38%

completed it for Patho (38%) and 7% completed it for APII. Both AP courses and Patho

are traditionally difficult courses for students, whereas failures are rare in NCAC for

which 21% of the sample had completed the ASSIST, none of whom failed. Based on

these findings it was ruled out that AC105 was related to improved academic success in API, APII, or Patho. Furthermore, it was concluded that academic failure was related to other factors associated with these courses and the students who were taking them.

Description of Interview Sample

Agreeing to an interview were 22 students, 13 of which scheduled and kept appointments. Although students in both API and APII completed the ASSIST, only API students agreed to an interview. Characteristics of interviewed students, identified by pseudonym, are described in Table 15.

Table 15

Characteristics of Interviewed Students

Student	Age	Grade	Grade%
Anatomy & Physiology I			
Laura	18	F	50
Jenny	19	F	52
Marie	25	C+	77
Doreen	20	A-	91
Kay	19	A-	91
Nursing Care of the Adult Client			
Sheila	30	B-	82
Martha	51	A-	91
Misha	22	A	93
Pathophysiology			
Mona	21	C-	72
Mary	21	C	73
Joe	35	B	83
Mindy	20	A-	91
Kayla	20	A-	91

Note: All of the participants were female except for Joe.

As shown in Table 15, six students (46%) who interviewed had earned an A or A-minus in the course for which they completed the ASSIST; three (23%) failed with a C-minus or lower, and four (20%) received a grade in the C to B-plus range.

Instruments

ASSIST. A modified version of the *Approaches and Study Skills Inventory for Students* (ASSIST; Entwistle, Tait, & McCune, 2000; Tait, Entwistle, & McCune, 1998) was used to quantify approaches to studying. The data generated by the survey was intended to answer research questions 1-10.

The ASSIST and several instruments from which it evolved were described in Chapter 2 of this dissertation, but a detailed description of the ASSIST scales is provided here. The ASSIST quantifies study approaches according to Deep, Strategic, and Surface Approach scales. These three main scales are comprised of 52 items and 13 subscales. Also included on the ASSIST are an additional 6 items intended to measure students' conceptions of learning, 8 items that measure Preferences for Different Types of Courses and Teaching, and a single item which asks students to rate on a scale of 1-9 their overall course performance based on their current graded work, with 1 representing "Rather badly" and 9 representing "Very well." This item was modified to permit ratings of 1-10, because it was assumed that U.S. nursing students would be more accustomed to 10-point scale, in which case, a rating of 10 indicated a course performance rating of "Very well." The 6 items intended to represent Conceptions of Learning were omitted in this study based on their limited psychometric development as noted in the ASSIST scoring manual (Centre for Research on Learning and Instruction, 1997).

Scoring the single item that asked students to rate on a scale of 1-10 their overall course performance based on their current graded work required no calculation since students simply circled one of the 10 numbers. To complete the section of the ASSIST that measured Approaches to Studying, students indicated the extent to which the 52 items represented their behavior by choosing responses from a Likert-type scale that included the following choices: 1—disagree, 2—disagree somewhat, 3—unsure, 4—agrees somewhat, and 5—agree. Each item representing a scale was added to achieve the main scale score, which was divided by the number of items in the scale to obtain the mean scale score. For example, the Deep and Surface Apathetic main scales were comprised of 4 subscales with 4 items each. To obtain mean scale scores for these scales, the ratings on each item representing the scale were totaled and divided by 16. The lowest possible score on either of these scales was 16 if all items were rated as 1; the highest was 80 if all items were rated a 5. Subsequently the lowest possible mean score was 4; the highest was 16. The Strategic Approach scale had 5 subscales with 4 items each, so the lowest possible scale Strategic Approach score was 20 if all items were rated a 1; the highest was 100 if all items were rated a 5. It follows that the lowest possible Strategic Approach mean scale score was 5 and the highest was 20 (Centre for Research on Learning and Instruction, 1997).

The eight items that measure Preferences for Different Types of Courses and Teaching were distributed evenly on two scales: (a) Supporting Understanding, related to the Deep Approach, and (b) Transmitting Information, related to the Surface Apathetic Approach. Items were rated as 1—definitely dislike, 2—dislike to some extent, 3—

unsure, 4—like to some extent, and 5—definitely like. The lowest possible score for either scale was 4 if all items were rated as definitely dislike; the highest possible score was 20 if all items were rated definitely like (Centre for Research on Learning and Instruction, 1997).

Mean scale scores were calculated for each main scale by dividing each scale score by the number of items within the scale. Mean scale scores were calculated primarily because the unequal number of subscales that comprise the Deep, Strategic, and Surface Apathetic Approach scales. Specifically, the Deep and Surface Apathetic scales have four subscales with four items each, while the Strategic Approach has five subscales with four items each. Thus, the Strategic scale is comprised of 4 more items than the either the Deep or Surface Apathetic scales. The greater number of items on the Strategic scale increases the chances that a student's Strategic scale score will exceed his or her other two scales, whereas averaging the scores makes them more appropriately comparable. Mean subscale scores were calculated for each of the subscales as well.

Through factor analysis, the stable factor structure of the ASSIST's Deep, Strategic, and Surface Approach scales has been confirmed primarily with samples of British students in widely varied programs of academic study. In one such study, the ASSIST was used to investigate causes of low academic achievement in first year students in various departments of study at a British technological university, where decent factor loadings of 0.53-0.75 were demonstrated for each of the ASSIST scales (Centre for Research on Learning and Instruction, 1997, p. 6).

The psychometric properties of the ASSIST were tested on a sample of 1231 primarily first year undergraduates attending six institutions representing a cross section of universities in the U.K. The subjects represented "16 disciplines ... most of which came from the arts and social sciences or from science and engineering" (Tait, Entwistle, & McCune, 1998, p. 266). Internal consistency reliability was established with Cronbach's alpha, which ranged 0.80-0.87 for the three main scales and 0.54-0.76 for the 13 subscales. Validity of the ASSIST was established by performing maximum likelihood factor analysis with oblique rotation, which established a three factor pattern explaining 60% of the variance. Tait et al. (1998) considered the sample of 1231 students "relatively small" and indicated that it is "highly likely that future data collection and conceptual analysis will suggest further modification that should be made" (p. 270).

Subsequent analyses of the ASSIST were conducted using "a longer and more recent version" of the instrument and a larger sample (Entwistle, Tait, & McCune, 2000). Again, Cronbach's alpha was computed as a measure of internal reliability and maximum likelihood factor analysis with oblique rotation was performed. Cronbach's alpha ranged 0.53-0.87, establishing "values which are acceptable for scales of their respective length and type" (Entwistle et al., 2000, p. 37). Factor analysis accounted for 58% of the variance and again resulted in subscales loading on their three respective factors (Entwistle et al.).

In addition to altering the scale for rating course performance, minor spelling and word modifications were made in order to make the language relevant and familiar to English speaking U.S. nursing students. For example, "tutor" was changed to "instructor"

and "marks" was changed to "grades." Words spelled with an "s" in British usage where "z" would be used in the U.S. were also changed. For example, "organised" was spelled "organized."

Attached to the front of each survey was a cover sheet on which students' Allen College identification (ID) number was pre-printed. The purpose of the ID number was to provide a temporary link between the survey and students' academic records, which were accessed through the college's Comprehensive Academic Management System[©] (CAMS[™]). In addition to students' ID numbers, the cover sheet provided instructions for completing the survey and requested age, sex, and the number of hours employed per week. The course for which the student completed the ASSIST was also listed on the cover sheet. As noted previously, an additional item asked respondents to indicate the extent to which a new course in the college curriculum, *AC105: College Transition*, may have influenced their study approaches in the class for which they completed the ASSIST.

After data analysis was complete, the students' ID numbers were blacked out in order to destroy the link between the completed survey and the students' data on the cover sheet. The surveys will be destroyed five years after the study is completed in accordance with scientific integrity guidelines published by the Midwest Nursing Research Society (2002).

Semi-Structured Interview Schedule. In order to investigate in greater depth students' approaches to studying and specific study strategies and tactics, semi-structured interviews were conducted with a purposive sample of students who had participated in

the survey. An interview schedule containing five open-ended items was followed during the interviews. Additional questions and prompts were introduced to encourage the student to elaborate and clarify their responses. In order to establish students' conceptions of the learning context or educational situation that served as the basis for their responses to the ASSIST, they were asked to describe the course for which they completed the ASSIST as well as to explain how the professor conducted class. Once the educational context had been established, items were introduced to elicit students' conceptions of how they learned and the specific study tactics they used. The interview items, listed in Table 16 were intended to generate data that was used answer research questions 11-18.

Table 16

Interview Schedule

Semi-Structured Interview Items
1. Describe the [name of class] for which you completed the ASSIST.
2. During [name of class], what did the instructor do?
3. During [name of class], what did you do?
4. After [name of class], what did you do to learn the material for the class?
5. How did you prepare for exams or quizzes in [name of class]?
Introduce additional questions and prompts as indicated by responses to open-ended items.

Survey Procedures

Class rosters for AP I, AP II, Pathophysiology, and NCAC were obtained from the Allen College's Comprehensive Academic Management System (CAMS™). A date on which to administer the survey during a class period as close as possible to the end of

the semester was negotiated with the professor for each course. Surveys were distributed to students as they entered the classroom. At the time the class was scheduled to start, students were given a brief verbal explanation of the survey and asked to read the cover letter. Students were reminded verbally that their participation was voluntary and were asked to remove the cover letter from the survey and keep it for future reference. This researcher was not present when students completed the surveys. Course professors collected the completed surveys and returned them to the investigator.

At the end of the semester, academic and demographic data was extracted from CAMS™ and entered into a Statistical Package for the Social Sciences® 13.0 (SPSS®) data file. Specific data that was accessed from CAMS™ included cumulative GPAs calculated just prior to fall 2004 semester, ACT scores, Assessment Technologies Incorporated (ATI) Test of Essential Academic Skills (TEAS) scores, ATI Self-Assessment Inventory scores, and course grades. Survey data was matched to the CAMS™ data and entered into the SPSS® data file. Course grades and grade percentages were provided by the instructors for each course in which students were asked to complete the ASSIST and entered into the SPSS® data file. ATI and TEAS scores were not analyzed for this dissertation work.

Interview Procedures

The rationale for conducting the additional qualitative component of this study was to obtain more detailed information, which would allow more in-depth illumination and analysis of study approaches that may be peculiar to nursing students because such strategies and tactics may go undetected or be inadequately revealed by using only a

structured self-report instrument (Lincoln & Guba, 1985; Kuzul, 1999). After the SPSS quantitative data file was complete, data were sorted by course grade to categorize students according the extent of their academic achievement for the course in which they completed the ASSIST. An effort was made to represent maximum variation in academic achievement by recruiting a purposive sample of students demonstrating high (A, A-), medium (B+ to C) and low (C- to F) achievement in the courses for which they completed the ASSIST (Kuzul, 1999). The interview sampling procedures were described previously.

Students selected for interview were contacted by letter and informed of the purpose of the interview. If willing to participate, the student signed a consent form and scheduled an interview time. Interviews took place in the investigator's office or a private conference room and were audio-recorded.

At the beginning of each interview the purpose was reiterated and the students were asked to select a pseudonym by which to identify themselves on the recording. It was explained that the pseudonym would be used to protect privacy in publications of study results. If students had no questions or concerns, the interview commenced starting with the first item on the interview schedule. The open-ended interview items were presented systematically as they were printed on the interview schedule, and were rephrased as needed for clarification. Additional questions and prompts motivated by students' responses were interjected throughout the interview. An effort was made paraphrase student responses in order to verify their intended meaning. Each interview lasted approximately 45 minutes.

The audio-taped interviews were transcribed verbatim by a professional transcriptionist who was familiar with the privacy requirements associated with the protection of human subjects and students. Participants were provided with a copy of their interview transcript and asked to verify it. Audio-tapes and transcripts will be destroyed after a period of five years in accordance with Midwest Nursing Research Society (2002) *Guidelines for Scientific Integrity*.

Data Analysis

Quantitative Analysis

Data were analyzed by using the Statistical Package for the Social Sciences (SPSS®) 15.0 Graduate Student Version unless otherwise specified. The ASSIST scales were treated as both ordinal and interval data (Knapp, 1990). Nominal and ordinal data were described with frequencies and percentages and the median and mode when appropriate. Interval and ratio level data were described with measures of central tendency and variability. Pearson correlations were run to determine relationships between variables measured at the interval or ratio level. Spearman's correlations were run if any of the variables involved in an analysis warranted ordinal or nominal level classification. Comparison of means for more than two groups was accomplished using one-way ANOVA; post hoc comparisons were made using Tukey honestly significant difference (HSD) test. The Kruskal-Wallis test was used in addition to, or in place of ANOVA when the use of a non-parametric test was indicated (e.g. small sample size). Comparison of means for two independent groups was accomplished with independent T-tests. Paired T-tests were used to make paired or dependent comparisons. When

appropriate, regression analyses were conducted to identify sets of independent variables that predicted specified dependent variables.

Cronbach's alpha coefficients were calculated as a measure of internal consistency reliability for all subscales and scales of the ASSIST. Confirmatory factor analysis (CFA) was performed to evaluate the construct validity of the ASSIST. CFA is a deductive statistical procedure intended to establish whether "a hypothesized factor structure provides a good fit to the data" (Kahn, 2006, p. 701). In other words, CFA was performed to identify the extent to which the 13 ASSIST subscales loaded on their intended Deep, Strategic, and Surface Apathetic scales for the data generated in this study.

Confirmatory factor analysis (CFA) was performed by Fred Lorenz, University Professor, Institute for Social and Behavioral Research, Iowa State University, Ames. Used to run the CFA was LISREL 8.45©, linear structural relations software authored by Jörskog and Sörbom, Scientific Software International.

Qualitative Analysis

Phenomenography. The method of phenomenography was applied to narrative data obtained from interview sessions. Phenomenography is a research method that was developed by educational researchers at the University of Gothenburg in Sweden during the 1970's (Marton, 1986). Marton and Pong (2005) state "Traditional phenomenographic research aims to investigate the qualitatively different ways in which people understand a particular phenomenon or an aspect of the world around them" (p. 335). The "different ways in which people understand" are referred to as "conceptions"

or ways of conceiving one's world, which are operationalized as "categories of description" as a result of phenomenographic analysis (Marton & Pong, p. 335). Conceptions are "basic unit of description in phenomenographic research" (Marton & Pong, p. 336).

Marton (1986) cites Piaget's work as an example of phenomenography because it "clearly aims at providing detailed description and analysis of the qualitatively different ways that children, in different stages of development, view various aspects of the world" (p. 32). Phenomenography has been used in previous studies of student learning including studies done by the developers of the ASSIST and its precursors (Entwistle, 1997; Entwistle & Ramsden, 1983; Entwistle, Tait, & McCune, 2000).

Marton (1986) contrasts phenomenography with phenomenology, the qualitative research tradition developed in the discipline of psychology, stating that the former "is more interested in the *content* of thinking than is traditional psychology" (p. 32), while the latter "[seeks] overarching laws of thought and perception that can be applied no matter what the situation or subject matter" (Marton, p. 32). Phenomenological researchers try to describe the essence or meaning of a phenomenon, whereas phenomenographers strive "to uncover all the understandings people have of specific phenomena and sort them into conceptual categories" (Marton, p. 32). In other words, phenomenography is not oriented toward one true conception, but is concerned with all conceptions of a phenomenon, correct or incorrect. Phenomenographers, unlike phenomenologists, do not use the strategy of bracketing their preconceived notions in an effort to locate immediate experience as a general state of reality, but instead attempt "to

describe relations between the individual and various aspects of the world around them, regardless of whether those relationships are manifested in the forms of immediate experience, conceptual thought, or physical behavior" (Marton, 1986, pp. 41-42).

Researchers can chart the qualitatively different conceptions individuals have with regard to phenomena in their world by observing their behavior in response to natural or experimental conditions, examining the things they create or produce, and by conversing with them (Marton, 1986). The semi-structured interview is a chief means of gathering data for phenomenographic analysis. The researcher enters the interview prepared with a schedule of open-ended items, but remains flexible, allowing subjects to "choose the dimensions of the question they want to answer" (Marton, 1986, p. 42). Interviews are audio-taped and transcribed verbatim (Marton).

Analysis of interview transcripts occurs in two phases. In the first phase each transcript is read thoroughly and segments of text that suggest themes or meanings are marked to denote quotes that capture the range of conceptions of the phenomenon represented by a particular question (Marton & Pong, 2005). The meanings conveyed by the quotes are considered in terms of the particular context from which they were derived. Context refers to the unique attributes that characterize the individuals being interviewed, including the reasons for interviewing them. The quotes identified in the first phase of analysis form the pool of data for the second phase of analysis (Marton, 1986).

In phase two of the analysis, the researcher focuses specifically on the quotes without considering the context from which they were derived. In other words, the quotes

are taken out of context in order to look for "meaning embedded [in] the quotes themselves" (Marton, 1986, p. 43). Specifically, the researcher sorts quotes into "piles" that represent categories with different attributes. Quotes may be rearranged and fitted to different categories and eventually "defined in terms of core meanings, on the one hand, and borderline cases on the other" (Marton, p. 43). Gradually the adjusting and rearranging of quotes within categories undergoes "a decreasing rate of change, and eventually the whole system of meanings is stabilized" (Marton, p. 43), ultimately resulting in conceptions that define a particular phenomenon.

Application of Phenomenographic Data Analysis in this Dissertation Work. For this dissertation, Marton's (1986) description of phenomenographic data analysis was adapted to incorporate the use of technology and to replace the technique of piling and perhaps re-piling of quotes. Specifically, narrative data was copied from interview transcripts and pasted into a sortable table (e.g., MicroSoft Excel™) such that each row represented a student or case and each column represented the students' response to the interview prompt that elicited it. Columns were labeled with headings that indicated the wording of the open-ended questions that appeared on the interview schedule.

The data generated from each open-ended interview question was analyzed systematically in the order that the question was presented during the interviews, however questions were sometimes revisited and the analysis adjusted as the need became apparent during the analysis of subsequent questions. Phase one of the analyses began after the text from each transcript had been assembled in the table.

Two specific contexts were considered as each student's responses were read: (a) the reason the student had been invited to interview (e.g., high, medium, or low academic success) and (b) the specific course for which the student had completed the ASSIST (e.g., API, Patho, or NCAC). Columns were included in the table to denote these contexts for each student. With these contexts in mind, pertinent words and phrases were highlighted in each response and extraneous or irrelevant information was omitted.

In phase two of the analysis, the responses within a column were studied systematically row by row without regard for the extent of academic success or the course for which the student had completed the ASSIST. Each response within a column was scrutinized for ideas or themes that were salient to the specific question represented by the column heading. Responses were also examined to identify specific study tactics. Additional columns were created to the right of the column that was being analyzed in order to accommodate the labels for the various conceptions and study tactics that emerged for the question addressed in that column. Columns were sorted by conception in order to group the quotes in the adjacent column, after which each quote was scrutinized again and conceptions were relabeled and adjusted as needed to more adequately represent the meanings conveyed by the quotes. Eventually the inclination to adjust and rearrange quotes within categories diminished, resulting in a final stable set of conceptions representing a particular phenomenon.

Identifying Relationships Between Conceptions, Study Tactics, Learning Contexts and Level Academic Achievement. Each conception gleaned from the data generated by each interview question was quantified according to the number and

proportion of students who demonstrated the conception for (a) each level of academic achievement (high, medium, and low) and (b) each learning context (API, Patho, and NCAC). In addition, the data was scrutinized to identify specific study tactics, which were described in terms of the proportion of students who used them and their apparent relationship to academic success and learning context.

CHAPTER 4

RESULTS

Overview

This chapter begins by reviewing the purpose of the study and the research questions that were addressed. Research questions 1-10 were addressed with data generated by the survey component of this study. Research questions 11-18 were addressed with data generated by the interview component of the study. The results are presented in the order that the research questions are listed. Specific research questions are used as section headings.

Purpose

The purpose of this study was to describe approaches to studying and study tactics used by baccalaureate nursing students enrolled in Anatomy and Physiology I (API), Anatomy and Physiology II (APII), Pathophysiology (Patho), and Nursing Care of the Adult Client (NCAC) and to identify the relationships between approaches to studying and selected factors associated with academic success. An additional purpose was to confirm the psychometric properties of the tool used to measure approaches to studying in this research. Specifically, the following research questions were addressed:

1. What is the dominant study approach used by baccalaureate nursing students while taking Anatomy and Physiology I (API), Anatomy and Physiology II (APII), Pathophysiology (Patho), and Nursing Care of the Adult Client (NCAC)?

2. Is there a relationship between study approaches used by baccalaureate nursing students and academic success as indicated by final course grade percentage, and if so, what is the nature of the relationship?

3. Is there a relationship between study approaches used by baccalaureate nursing students and cumulative GPA achieved prior to the semester during which the student participated in the study, and if so, what is the nature of the relationship?

4. Is there a relationship between study approaches used by baccalaureate nursing students and cumulative ACT score achieved prior to the semester during which the student participated in the study, and if so, what is the nature of the relationship?

5. Is there a relationship between study approaches used by baccalaureate nursing students and age in years, and if so, what is the nature of the relationship?

6. Is there a relationship between study approaches used by baccalaureate nursing students and number of hours spent each week in paid employment, and if so, what is the nature of the relationship?

7. Is there a relationship between study approaches used by baccalaureate nursing students and number of hours spent each week studying, and if so, what is the nature of the relationship?

8. Is there a relationship between study approaches used by baccalaureate nursing students and rating of performance in the course, and if so, what is the nature of the relationship?

9. What types of course characteristics and teaching methods do baccalaureate nursing students prefer?

10. Is the ASSIST a valid and reliable instrument for assessing the study approaches of baccalaureate nursing students at Allen College?

11. What are baccalaureate nursing students' conceptions of the course for which they completed the ASSIST?

12. What are baccalaureate nursing students' conceptions of what their instructor does during class?

13. What are baccalaureate nursing students' conceptions of what they do during class?

14. What are baccalaureate nursing students' conceptions of what they do after class to learn course content?

15. What are baccalaureate nursing students' conceptions of what they do after class to prepare for exams?

16. What study tactics do baccalaureate nursing students use to learn course content and prepare for exams?

17. Is there a relationship between study tactics used by baccalaureate nursing students and course subject area, and if so, what is the nature of this relationship?

18. Is there a relationship between study tactics used by baccalaureate nursing students and student achievement, and if so, what is the nature of this relationship?

<u>Survey Results</u>

<u>What is the Dominant Study Approach Used by Baccalaureate Nursing Students While Taking API, APII, Patho, and NCAC?</u>

<u>Dominant Study Approach within Sample</u>. The Strategic Approach scale had the

highest mean study approach score; the lowest mean scale score was recorded for the

Surface Apathetic Approach scale. The mean scale scores for Deep, Strategic, and

Surface Apathetic Approach scales are presented in Table 17.

Table 17

Study Approach Scores: Strategic, Deep, and Surface Apathetic Mean Scale Scores

Scales	M	SD	Minimum	Maximum
Strategic Approach	3.82	0.57	2.20	4.95
Deep Approach	3.65	0.54	2.25	4.88
Surface Apathetic approach	3.00	0.62	1.69	4.69

Students were classified into dominant study approach groups according to their

highest subscale score. A majority (55%) of students scored the highest on the Strategic

Approach scale, which was also the highest scale score for the sample as a whole (See

Table 17 presented previously). The Deep Approach represented the dominant scale score

for 45 students (26%), while the Surface Apathetic approach score was highest for 33

students (19%). One student averaged 3.50 on both the Deep and Surface Apathetic

Approach scales, but only 3.45 on the Strategic Approach, resulting in dual dominance of

the Deep and Surface approaches; this student was excluded from any analyses involving

the comparison of Deep, Strategic, and Surface Apathetic groups. The frequencies and percentages of scales representing participants' highest study approach scores are presented in Table 18.

Table 18

Number and Proportion of Students with Highest Mean Scale Scores in each Approach

Scale	N	%
Scored highest in Deep Approach	45	25.9
Scored highest in Strategic Approach	95	54.6
Scored highest in Surface Apathetic Approach	33	19.0
Scored highest equally on Deep and Surface Approaches	1	0.6

<u>Dominant Study Approaches within Specific Courses</u>. In each course, students scored highest on the Strategic Approach and lowest on the Surface Apathetic Approach. Strategic, Deep, and Surface Apathetic mean scale scores for each course are presented in Table A7 (Appendix A). Most students within each course were classified in the Strategic Approach dominant group. The numbers and percentages of students classified in each dominant study approach group in each course are presented in Table 19.

There were no statistically significant difference in the proportions of students with dominant Deep, Strategic, or Surface Apathetic mean scale scores in API, APII, Patho, and NCAC (Likelihood ratio $\chi^2 = 8.025$, df = 6, p = .236), nor were there any statistically significant differences in Deep, Strategic, and Surface Apathetic mean scale scores among API, APII, Patho, and NCAC (Table 20).

Table 19

Numbers and Percentages of Students with Dominant Strategic, Deep, and Surface Apathetic Mean Scale Scores in Each Course

| | Course for Which Students Completed the ASSIST | | | | | | | |
| | NCAC | | API | | APII | | Patho | |
Dominant Approach	N	%	N	%	N	%	N	%
Strategic Approach	22	61.1	29	50.0	10	71.4	34	51.5
Deep Approach	10	27.8	13	22.4	1	7.1	21	31.8
Surface Approach	4	11.1	15	25.9	3	21.4	11	16.7
Deep-Surface Combination	0		1	1.7	0		0	

Table 20

Comparison of Deep, Surface Apathetic, and Strategic Mean Scale Scores among Courses

Approach	SS	df	MS	F	P
Deep Approach					
Between Groups	0.40	3	.134	0.453	.716
Within Groups	50.25	170	.296		
Total	50.65	173			
Surface Approach					
Between Groups	1.18	3	.394	1.012	.389
Within Groups	66.26	170	.390		
Total	67.45	173			
Strategic Approach					
Between Groups	0.90	3	.300	0.932	.427
Within Groups	54.78	170	.322		
Total	55.68	173			

Is There a Relationship Between Study Approaches Used by Baccalaureate Nursing Students and Academic Success as Indicated by Final Course Grade Percentage, and if so, What is the Nature of the Relationship?

There was a significant positive correlation between Deep Approach mean scale scores and the final course grade percentages (r = .16, p = .037). Also significantly and positively correlated were Strategic mean scale scores and course grade percentages (r = .39, p < .001). Surface Apathetic Approach mean scale scores were negatively correlated with course grade percentages (r = -.37, p < .001).

Is there a Relationship Between Study Approaches Used by Baccalaureate Nursing Students and Cumulative GPA Achieved Prior to the Semester During Which the Student Participated in the Study, and if so, What is the Nature of the Relationship?

There was a significant positive correlation between Deep Approach mean scale scores and cumulative GPA (r = .19, p = .017). Also significantly positively correlated were Strategic mean scale scores and GPA (r = .31, p < .001). Surface Apathetic Approach mean scale scores were negatively correlated with GPA (r = -.25, p = .001).

Is There a Relationship Between Study Approaches Used by Baccalaureate Nursing Students and Cumulative ACT Score Achieved Prior to the Semester During Which the Student Participated in the Study, and if so, What is the Nature of the Relationship?

Correlations between cumulative ACT score and Deep, Strategic, and Surface Apathetic mean scale scores were not statistically significant (Table 21).

Table 21

Relationship between ASSIST Scales and ACT Scores

Scale	r	p
Deep Approach	.122	.131
Strategic Approach	-.015	.851
Surface Apathetic Approach	-.067	.408

Is there a Relationship Between Study Approaches Used by Baccalaureate Nursing Students and Age in Years, and if so, What is the Nature of the Relationship?

Age was significantly positively correlated with Deep Approach mean scale scores ($r = .31$, $p < .001$) and significantly negatively related to Surface Apathetic Approach mean scale scores ($r = -.39$, $p < .001$). The correlation between age and Strategic Approach mean scale scores was not significant ($r = .12$, $p = .128$).

Is there a Relationship Between Study Approaches Used by Baccalaureate Nursing Students and Number of Hours Spent Each Week in Paid Employment, and if so, What is the Nature of the Relationship?

A statistically significant negative correlation was revealed between number of hours spent in paid employment each week and Strategic Approach mean scale scores ($r = -.164$, $p = .032$). There were no statistically significant correlations between hours worked and the Deep ($r = -.046$, $p = .553$) and Surface Apathetic ($r = .039$, $p = .610$) mean scale scores.

Is There a Relationship Between Study Approaches Used by Baccalaureate Nursing Students and Number of Hours Spent Each Week Studying, and if so, What is the Nature of the Relationship?

There was a statistically significant negative correlation between number of hours spent studying each week and Surface Apathetic mean scale scores ($r = -.24$, $p = .002$). Number of hours spent studying was positively correlated with Deep Approach scores ($r = .31$, $p < .001$). A positive correlation was also found between hours spent studying and Strategic Approach mean scale scores ($r = .44$, $p < .001$).

Is There a Relationship Between Study Approaches Used by Baccalaureate Nursing Students and Rating of Performance in the Course, and if so, What is the Nature of the Relationship?

There was a positive correlation between students' ratings of their performance in the course at the time they completed the ASSIST and Deep Approach mean scale scores (r = .27, p < .001). Strategic Approach scores were also positively correlated with performance ratings (r = .44, p <.001). Surface Apathetic scores were negatively correlated with performance ratings (r = -.44, p < .001).

What Types of Course Characteristics and Teaching Methods do Baccalaureate Nursing Students Prefer?

Items on the Transmitting Information scale received the highest ratings. The Transmitting Information scale contains items that relate to the Surface Apathetic Approach to studying. Mean ratings for course characteristics and teaching methods scales are described in Table 22.

Table 22

Course and Teaching Preference Mean Scores

Course and Teaching Preference Scales	M	SD	Minimum	Maximum
Supporting Understanding [a]	3.39	0.78	1.50	5.00
Transmitting Information [b]	4.47	0.52	2.75	5.00

[a] Related to the Deep Approach.
[b] Related to the Surface Apathetic Approach.

Two of the four items representing course and teaching characteristics related to the Deep Approach were preferred by over half of the participants. A majority (86.2%) indicated that they definitely liked or liked to some extent instructors who encouraged

them to think for themselves and who showed participants how they themselves think. Most students (67.9%) also indicated that they definitely liked or liked to some extent exams that allowed them to show that they had thought about the course material for themselves. Half (49.5%) of the participants indicated they liked to some extent or definitely liked books that challenged them and provided explanations that went beyond the lectures. Most students (61%) indicated that they disliked to some extent or definitely disliked courses in which they were encouraged to read around the subject a lot for themselves. Preferences for course characteristics and teaching method related to the Deep Approach are described in Table A8 (Appendix A) for each course and the entire sample.

A majority of the participants indicated that they liked or definitely liked all four of the course and teaching characteristics on the Surface Approach—Transmitting Information scale. Most (92.5%) liked or definitely liked instructors who told them exactly what to put down in their notes. Exams or tests that needed only the material provided in their lecture notes were liked or definitely liked by 91.3% of the students. Most (90.2%) of the students liked or definitely liked courses in which it was made very clear just which books they had to read; 92.4% liked or definitely liked books that gave them definite facts and information which could easily be learned. Preferences for course characteristics and teaching methods on the Surface Approach—Transmitting Information scale are described in Table A9 (Appendix A) for each course and the entire sample.

Is the ASSIST a Valid and Reliable Instrument for Assessing the Study Approaches of Baccalaureate Nursing Students at Allen College?

Internal consistency reliability of the ASSIST was determined by calculating Cronbach's alpha coefficients, which were above .80 for the Deep, Strategic, and Surface Apathetic main scales and ranged 0.52-81 for the 13 subscales as shown in Table 23.

Table 23

Internal Consistency Reliability of ASSIST Scales and Subscales

Scales and Subscales	Cronbach's Alpha
Deep Approach	0.83
Seeking meaning	0.68
Relating ideas	0.52
Use of evidence	0.54
Interest in ideas (related sub-scale)	0.66
Strategic Approach	0.87
Organized studying	0.62
Time management	0.81
Alertness to assessment demands	0.59
Achieving (related sub-scale)	0.72
Monitoring effectiveness (related-subscale)	0.66
Surface Apathetic approach	0.83
Lack of purpose	0.68
Unrelated memorizing	0.69
Syllabus-Boundness	0.59
Fear of failure (related sub-scale)	0.73

To confirm the hypothesized factor structure of the ASSIST scales and subscales, and to establish construct validity, confirmatory factor analysis (CFA) was performed. It

was hypothesized that the 13 ASSIST subscales, or observed variables, would load on their respective scales, Deep, Strategic, and Surface Apathetic. CFA was run using LISREL 8.54© with maximum likelihood (ML) extraction. Six confirmatory factor models were run, releasing a parameter after each, before arriving at the final model.

Strategic Approach—Monitoring Effectiveness was correlated with Deep Approach—Use of Evidence ($r = 30$, $t = 3.15$, $p < .05$), so it was allowed to load on Deep Approach in the final model. Also incorporated into the final model were significant correlations among error terms (i.e. Thetas or EPS Error Variances) for 5 subscale pairs (See Table A10, Appendix A). The final model is presented in Table 24.

Table 24

Confirmatory Factor analysis: Factor Loadings of ASSIST Subscales on Main Scales

Observed Variables	Factors		
	1	2	3
DA—Seeking meaning	.96		
DA—Relating ideas	.50		
DA—Use of evidence	.63		
DA—Interest in ideas	.83		
SA—Organized studying		.73	
SA—Time management		.83	
SA—Alertness to assessment demands		.26	
SA—Achieving		.83	
SA—Monitoring effectiveness	.28	.48	
SAA—Lack of purpose			.72
SAA—Unrelated memorizing			.63
SAA—Syllabus-Boundness			.67
SAA—Fear of failure			.40

Interview Results

What are Baccalaureate Nursing Students' Conceptions of the Course for Which They Completed the ASSIST?

"Describe the class for which you completed the ASSIST" was the directive presented to students in the interview sample in order to generate data that could be used to answer research question 11. Three conceptions were derived from their responses:

1. Content Delivery

2. Demands on Student

3. Topic of Study

Content Delivery. Three students, Marie, Jenny, and Mona responded to question 1 by describing what happened during their class in terms of what the instructor did, in effect answering question 2 simultaneously. Their descriptions of the instructor's behavior indicated conceptions of their courses as a means of providing information, or Content Delivery. Marie's and Jenny's conceptions applied to API, while Mona's was provided in the context of Pathophysiology. Jenny had failed API with an F while Mona failed Pathophysiology with a C-minus. Marie had earned a C-plus in API.

Demands on Student. Seven students, Kay, Doreen, Joe, Mindy, Martha, Misha, and Sheila, described their courses in terms of the demands imposed upon them. Doreen and Kay described API as follows:

> Doreen: Fifty minutes long, three times a week, so um, I went, I never missed one class. [API is a] very challenging, very tough science class involving a lot of studying time.

> Kay: Lecture over anatomy and physiology with [exams] about once a month requiring memorization of 20-30 pages of [notes].

Joe and Mindy made the following comments about Patho:

> Joe: "[Patho is] a really intense three hour class once a week which required a lot of reading in the textbook and a lot of memorization."

> Mindy: There were frequent quizzes, several exams, [and] some worksheets.

Kay, Mindy and Doreen had achieved high success (A-) in their courses while Joe had earned a B.

All of the students who had completed the ASSIST in NCAC also demonstrated the Demands on Student conception. Sheila, Martha, and Misha described their course as requiring them to prepare for weekly quizzes over assigned reading as well as preparing to apply what they learned in class during a weekly five-hour clinical component. Martha and Misha had earned A minuses in the course, while Sheila earned a B minus.

Topic of Study. Laura, Mary, and Kayla answered question 1 in terms of the topic or subject covered during the course. These students represented the range of academic success, earning grades of F, C, and an A minus respectively. Laura was taking API, while Mary and Kayla were in Patho. Laura described API as "basically the anatomy and physiology of the body" and also noted that the class incorporated "labs" which "usually deal with lecture." Kayla and Mary both mentioned "disease" in their depictions of Patho; Kayla also noted, "It [Patho] really helped with the classes I'm taking now."

All of the students who had completed the ASSIST in Nursing Care of the Adult Client (NCAC) demonstrated the Topic of Study conception by mentioning in their descriptions of the course that they learned in class about nursing care of adults with specific health problems.

What are Baccalaureate Nursing Students' Conceptions of What Their Instructor Does During Class?

To answer research question 12, students in the interview sample were asked, "During class, what does the instructor do?" All students conceived of the instructor as delivering content during class. In addition to delivering content, three extensions of this conception of what the instructor did during class were expressed. These conceptions indicated that during class the instructor:

1. Provided a note-taking handout

2. Facilitated content application

3. Presented what students needed to know for exams

Professor Delivered Content and Provided a Note-taking Handout. All Patho (N = 5) and NCAC (N = 3) students reported receiving some type of note taking handout to be used during lecture. Note-taking handouts were described either as outlines or multiple-page packets of three to four Power Point slides condensed on 8.5 x 11 inch sheets of paper, which students were expected fill in as content was delivered during lecture. Students in API were not provided with any type of note-taking handout and reported taking notes on their own paper as the professor wrote detailed notes and drew diagrams on the chalk board.

Professor Delivered Content and Facilitated Content Application. In addition to the conception of the professor delivering content, three of the five API students, Marie, Jenny, and Kay, reported that when time permitted, they were given in-class assignments in the form of worksheets that allowed them to apply what they had just covered in lecture. Kay, an API student captured this conception stating:

> Um, well, basically, [the professor] just lectured and as she lectured she would write on the board. So, she wouldn't go too fast, so we like had a chance to like keep up. And kinda follow what she was saying. And um, occasionally, we would get done like 10 minutes early to do an in class assignment but we were always there the whole time.

Two Pathophysiology students indicated that their instructor related the content covered during lecture to clinical practice by presenting case studies or sharing stories of her clinical experiences. This conception was also articulated by Kayla who said the following about her Patho instructor:

> She did a wonderful job of, at relating [lecture] to clinical experience. You know, giving us case studies. And that really helped me to learn the material, to have those examples that were given, and for critical thinking.

Also describing what the Pathophysiology professor did during class was Mona, who articulated a conception consisting of Delivering Content and Providing Note-taking Handouts, in addition to Facilitating Content Application:

> She always uses Power Point. She gives us the notes, the outline to the Power Point. And just lectures. She's very good. She gives us very good information, which I really like. But it's hard to understand the information she gives us. She gave us like the Power Point outline and the slides and then I took notes on them. She almost would go more in depth than what was on the [PowerPoint] slide. She, um, she would say what was on the slide, but she would say it in other ways.

Two NCAC students, Misha and Sheila indicated that their instructor facilitated content application through case studies or by relating personal clinical experiences during class. Misha explained that the instructor presented what was on the note-taking handout, but would elaborate on it and "provide stories or something." Sheila reported occasionally working in small groups on case studies during class.

Professor Delivered Content and Presented what Students Needed to Know for Exams. Two API students indicated that receiving lecture content was essential because it

contained "everything you needed to know for the test." Although the API instructor did not tell students specifically what they needed to know for the test, it was implied that the content delivered in class and captured in their notes was "fair game for the exam." Doreen, a highly successful API student, demonstrated this conception by describing what her API instructor did during class:

> She would lecture about everything we needed to know for the test. Everything she says is fair game for the exam. So if you wanted to be sloppy in your notes, or lazy, then you can miss a ton on the test. You have to study every single inch of what she taught you.

In order to emphasize the importance of the content that was delivered during lecture, Doreen also commented that the API instructor "doesn't give you any clues as to what's going to be on the test."

During API lectures, Laura and Jenny also tried to be vigilant for clues to what would be on exams. Jenny stated, "Um, I label everything that she labels [on the chalk board] because usually those things are on the tests, because they're going to be on the test." Laura summed up the importance of lecture content to exams by stating, "if you missed lecture, you were in pretty deep trouble." Mary tuned in to specific verbal clues during Patho lecture. For example, she stated, "if [the instructor] would say, 'You know, I think I'd really take a second look at this,' then I'd star it or highlight it, because then I knew I was going to see it again on the test."

What are Baccalaureate Nursing Students' Conceptions of What They Do During Class?

In order to answer research question 13, students in the interview sample were asked, "What did you do during class?" All students expressed conceptions of taking notes. Six students indicated that they tried to capture all of the information in lecture.

One student, Martha, coped with this need by audio-taping each lecture, which allowed her to use a different approach to note taking during lecture that will be described in the following section. Since note-taking was the dominant conception of what students did in class, conceptions about note-taking were explored. Two distinct conceptions of note-taking emerged. They were:

1. Writing Everything Down

2. Writing Main Ideas

Writing Everything Down. Six students conceived of note-taking as writing everything the professor said or wrote during lecture. Five of the six students who demonstrated the Writing Everything Down approach, four in API and one Patho, indicated note-taking had to be executed quickly because of the amount of content being delivered in a relatively short period of time. The following is Mona's conception of her note-taking in Pathophysiology:

> Sometimes it's hard to get it all – you know sometimes it's hard to write it all, because it's so much [information]. You know, you have to go fast. The teacher really doesn't have a choice. If she doesn't go fast, then she will never get done, what's she's supposed to cover in the class time.

Jenny also described the challenges of writing everything down during API lecture while simultaneously listening for hints about test material:

> But sometimes everything goes so fast in that class [API], so you're like writing while she's talking and then like I write exactly what she writes on the board, and maybe a little more emphasis because obviously, the board is like, she's shortening it up a bit, and I try to understand it a little bit more. I draw everything she writes down on the board. Um, I label everything that she labels because usually those things are on the tests, because they're going to be on the test. Some days [I'm busy writing everything down] and then I miss something she said, sometimes, yeah. I do that a lot of times.

In order to deal with the need to be quick and thorough in writing everything down during an API lecture, Doreen stated that she used her own version of medical-terminology-based "shorthand writing because, there's a lot of information [the professor] packs into 50 minutes." Although she used shorthand, Doreen also indicated that the notes were "messy," so after class she "had to go home and rewrite them." Sheila also reported using some type of shorthand while taking notes in NCAC, although she focused on writing the main ideas of the lecture rather than trying to get it all down.

Writing Main Ideas. Seven students expressed the Writing Main Ideas conception of note-taking. This conception was suggested by statements that indicated an attempt to paraphrase the key points of lecture without writing everything down verbatim. Kay articulates this conception in her description of how she dealt with information written and spoken by her API professor:

> What she would write in down on the board sometimes, it would be sketchy, and you know, but like if I listened to like everything she was saying, it was easier for me to understand, to comprehend and write it how it makes sense to me.

During NCAC, Sheila also tried to listen to the professor "as much as possible," and used her own version of shorthand and abbreviations to capture the main ideas in her notes. Martha described a different approach to capturing the main ideas by audio-taping and using her textbook during lecture. She said, "I'd always follow along in the text. I kept my text with the outline and I put like a little page number on the outline, you know, for the text page on the outline." Martha's page number annotations allowed her to compare her notes to corresponding information in the textbook later when she was studying for an exam. Similarly, Joe, also a NCAC student, indicated that rather than concentrating on

writing everything from lecture in his notes he tried to listen and indicate in his notes the topics that he needed to review later. Joe stated, "I really paid attention to what I had to concentrate on later [so that] the amount of studying I had to do would be more efficient."

One of the seven students who demonstrated the Writing Main Ideas conception of note-taking also indicated an inclination to try to write everything down. Kayla described her vacillation between the two conceptions in Pathophysiology:

> I would sit in class and just take notes and make sure I got everything down. And if I had questions I would go talk to [the professor] individually after class. Um, like, I do try to write down as much as I can, word for word, if I can. But, um, a lot of times, I try to think it through my head and try to write down what will make sense to me later.

What are Baccalaureate Nursing Students' Conceptions of What They Do After Class to Learn Course Content?

Research question 14 was addressed by interview question 4. Specifically students were asked, "After class, what did you do to learn the material for the class?" The purpose of asking this question was to identify conceptions about studying and learning outside of class and to reveal within the emergent conceptions, specific study tactics.

Only two students, both of whom failed the course for which they completed the ASSIST, did nothing to learn the material after class. These two students described what they should have done after class, rather than what they actually did, thus articulating the first major conception. Three additional conceptions were discerned from the data. The four conceptions gleaned from interview question 4 are these:

1. I Should Have Done *Something* After Class

2. I Did Something Right Away After Class

3. I Referred and/or Read the Textbook After Class

4. I Reviewed and/or Revised My Notes After Class

Conceptions 2-4 are also considered study tactics, which will be elaborated on within the results of Research Question 16-18.

I Should Have Done Something After Class. When asked "After class, what did you do to learn the material for the class?" Laura and Mona, two of the three students who failed the course for which they completed the ASSIST, responded by identifying what they *did not* do rather than what they actually did. Mona explained that she had not taken Patho seriously enough and that she had devoted a greater proportion of her time to her other courses, admitting, "I had a hard time adjusting. You have to study. I'm so used to being able to get good grades without studying. I just didn't study." Laura stated that she had not done "a lot of things" after class and went on to describe what things she should have done after class:

> I didn't go into the next area like I should have right after lecture. Then I wasn't studying like I should have been. Well, I should have been going over my notes everyday after lecture. I should have studied everyday and then I should have been studying on the weekends. Something that I really sense is that to help, some people, what they do, is they copy their notes onto another sheet until they have it memorized. They get it memorized and then they go onto the next page. That's something some of my friends do now.

I Did Something Right Away After Class. Seven students described the importance of doing some type of activity related to their course notes or homework soon, or "right away" after class. Five of the students were in API and two were in Patho. One of the students was Laura (API), who had expressed regret for not doing some type

of study activity right away after class. As for students who actually used some type of

study tactic right away after class, one reason for doing so related to improving their

chances of understanding the topics that were covered during lecture. The following

statements made by Kayla and Marie illustrate this intent:

> Kayla: I would go home and study the material. I liked to do it after every class to
> make sure I understood it."
>
> Marie: I figured if I waited a day or until the morning it was due, that I wouldn't
> understand it as clearly.

Kay also described typing her API notes right after class to facilitate her understanding of

lecture content. She said:

> I typed up all my notes after I, after lecture. I try to do it like right away, like that
> night. But if I don't, then, you know, I don't learn it as well. Like you know, if
> you do it right away, you learn the material 'cause you heard it twice right in a
> row, you know.
>
> Doreen, Jenny, Mary, and Kayla reported reviewing their notes right away after

class. Doreen's reason for doing so was related to managing the volume of notes she

would ultimately have to deal with in preparation for an exam. She recalled studying "54

pages worth of notes" for one of her API exams and explained that if she had waited until

right before the exam to study them that she "would have failed it." After failing API,

Laura shared Doreen's attitude about not waiting until right before the exam to study her

notes, stating, "I should have been going over my notes everyday after lecture." In

contrast to Laura, Jenny, who had also failed API, described in elaborate detail what she

did right away with the content she received during class on a typical day:

> I rewrite my notes every afternoon after class. And then I go to work and then I
> usually come home and review those notes. Mainly that [rewriting] takes a half an
> hour to an hour. ...If we get worksheets handed back to us from the previous day

or whatever, I review those too. Um, I just try to look over things to make sure it sticks in my head and I'm trying to like learn to teach myself the context or whatever, just trying or whatever to stick to the memorization, or I don't know....

I Referred to and/or Read the Textbook After Class. Seven students demonstrated a conception related to the use of their course textbook after class. Some students used their textbook only as a reference to clarify their lecture notes while others read it regularly either in preparation for, or as a follow-up to lecture. Still others used the textbook both ways.

Sometimes use of the textbook was driven by the expectation that students would be quizzed over assigned reading. Students in NCAC expected to have a quiz during each class meeting over the chapters they had been assigned to read in preparation for lecture that day. Two of the three NCAC students, Martha and Misha, reported reading the textbook regularly before class. All three used the textbook after class as a reference for clarifying the notes they had taken during class. Misha reported reading the textbook and creating as set of notes from which to study based on selected information from the textbook:

> Um, I read all the required readings. Um, and I read, well, when I read, I read the sentence and then I um, decide if it's important enough to highlight, then I read it again when I'm highlighting it. And then, I get all the reading done that way. And then I would go back and write down all the highlighted stuff.

Although Sheila did not mention reading the textbook to prepare for NCAC or to create notes, she explained that she used it to clarify her NCAC lecture notes. If there was something Sheila did not understand, or a topic she felt "a little bit weak in" then she would refer to the topic in her textbook for clarification.

Martha described how she used the textbook for two different purposes: (a) to

prepare for quizzes and (b) during class while taking notes:

> I'd always follow along in the text [during lecture]. I kept my text with the outline
> and I put like a little page number on the outline, you know, for the text page on
> the outline. So, then if afterwards, if there was something [the professor] didn't
> explain so that it made total sense to me, or I had some question later, I could
> always refer back to that specific page in the text. I would always after class, too,
> and before the exam I would go back and read the text a little bit more, certain
> parts that I maybe didn't quite catch the first time.

The textbook was considered less essential by students in classes other than

NCAC, but some students still reported either using it as a reference or reading it

regularly. For example, Mindy described using her textbook in Pathophysiology as a

reference or resource just in case she didn't understand something in her lecture notes. In

contrast, Joe reported always reading the textbook in Pathophysiology because he stated,

"It can't contradict itself." Marie felt that reading the textbook chapters regularly for API

was beneficial, but she did so in preparation for lectures, not as a means of clarifying

lecture notes after lecture. In contrast, Jenny described how she would use the textbook to

clarify her notes after API lecture as follows:

> I will open up my textbook, which a lot of people don't because [the professor's]
> tests are just basically [from] lectures. But if something doesn't make sense in my
> notes, then I will look in the textbook to see, you know, if I'm missing something,
> or if that word doesn't make any sense to me. Or whatever.

I Reviewed and/or Revised My Notes After Class. The most prevalent note-

related activity outside of class was notes review. Reviewing notes consisted of reading

them "over," reading "through" them, or "going through" them. Notes-review was also

the most prevalent study tactic students used to prepare for exams. No distinction was

made during the interviews as to whether students had reviewed their notes in preparation

for an exam or for other reasons; consequently, the tactic of notes-review will be described in conjunction with the fifth interview question which explored what students did to prepare for exams.

Other note-related study activities included clarifying and identifying sections of importance with the assistance of the professor and revising notes to varying extents. Five students reported some form of notes revision. Revising lecture notes involved typing or re-writing them verbatim or in condensed form. Doreen and Kay, reported typing their API lecture notes. While Doreen condensed hers, Kay simply typed hers as she had written them during lecture, formatting certain sections with bold type to emphasize key points. Jenny, as noted previously, reported rewriting her "notes every afternoon after class."

Misha described creating a set of notes from which to study based on her NCAC lecture handouts and related reading in the textbook, essentially transforming selected information from the handouts and textbook into condensed form. Mary also created a set of condensed lecture notes by attending exam preparation sessions conducted by the Patho professor and by meeting individually with the professor. Mary described her notes-revision process as follows:

> Before a test [the professor] would always have a test review, so I always went to those and then she'd always say, "You should focus on this information, focus on this information," so then I would highlight it in my notes and then I would go and like before the test I would type up everything and like all the different things that we like *had* to know. And then I'd just focus on that instead of my notes, just write everything out about it. So it seemed to work really good for me.

What are Baccalaureate Nursing Students' Conceptions of What They Do After Class to Learn Course Content?

Research question 15 was addressed by interview question 5. Specifically students were asked, "How do you prepare for exams or quizzes?" The purpose of asking this question was to identify conceptions about studying and learning outside of class and to reveal within the emergent conceptions, specific study tactics. Asking students what they did to prepare for exams and quizzes revealed five conceptions:

1. Studying is Reviewing Notes

2. Cramming is Undesirable, but Sometimes Unavoidable

3. Studying Allows Me to Visualize My Notes During the Test

4. Studying Involves Self-Testing

5. Studying Requires Taking a Break Right Before the Test

Conceptions 1 and 4 are also considered study tactics, which will be elaborated on within the results of Research Question 16-18.

Studying is Reviewing Notes. Reviewing notes prior to an exam was the primary study tactic reported by all students who were interviewed. Reviewing notes consisted of reading them "over," reading "through" them, or "going through" them.

Kay first prepared her notes for use during studying by typing them adding bold formatting to emphasize certain concepts. The following statement by Kay indicates her conception of reviewing those notes:

> I just read my notes. And, I would read them through briefly and get the idea of what they were. And then, I would, like I would go through them and highlight them. Basically, it was just a lot of repetition of just reading through my typed notes.

Jenny also reviewed for her exams using lecture notes she had revised after each class:

> Um, for a lecture test, I usually review for an entire day the lecture notes, but then usually prior, like the tests are usually on Mondays, so that whole week before, that weekend I try to review my lecture notes, I will try to review everything from the last lecture exam. I will review for at least two hours a night.

Although Sheila did not practice notes-revision, she reported reviewing her

NCAC notes regularly and multiple times so by exam time she had already done her

studying:

> The number one thing that I do is I review the notes at least two to three times a week. Just read through them. Sometimes I just skip through them to get the general idea, but as long as I keep the topics that we've talked about in my mind, then, I almost feel like my mind is thinking about it, even when I'm not actually studying it.

Kayla also did not revise her Pathophysiology notes, but described a thorough,

systematic, determined approach to reviewing notes as follows:

> I thoroughly went through my notes, understanding each piece of information... [I'd] make sure I reviewed each packet [of lecture handouts] before I went on to the next. And, that really seemed to work well.

Four students, Laura, Mona, Martha, and Joe, reported reviewing their notes a

single time in preparation for an exam. Laura and Mona, both of whom had failed the

course for which they completed the ASSIST, reported no other study activities besides

reading their notes through once before the exam. In contrast, Martha and Joe, both

academically successful, used at least one additional study tactic. Joe read his Patho

textbook in addition to reviewing his notes before an exam. Martha followed along in her

NCAC textbook during lecture and referred to it afterwards to clear up inconsistencies or

misunderstandings in her notes. Furthermore, Martha also made audio-tapes of the

lectures, which she reported listening to during her commutes to and from campus:

I listened to my tapes. It helped me. It was a time saving thing, because I did not have time to preview all of my notes from the classes that I was taking. So, using the tapes was my way of reviewing my notes. And then, like I say, if there was some question still, I could go back to my [textbook]. But that was my review.

Other academically successful students reported reviewing their notes more than once in addition to using other study tactics. For example, Kay, Mindy, and Misha indicated that occasionally they would create note-cards or flash-cards to assist them in memorizing information. Mindy said, "I would make note cards, if it was something that I, you know, could scan through to memorize or something like that to make it easier to layout."

In addition to reviewing her lecture notes multiple times, Mary emphasized the benefits of attending exam preparation sessions, or "test review," as a way to modify her notes. The Patho professor led the test reviews, during which Mary would highlight areas in her notes indicating the information she should focus on based on what the professor advised during the session:

> I always went to those [test reviews] and then she [the professor] she'd always say, "You should focus on this information, focus on this information." So then I would highlight it in my notes and then I would go and like before the test and I would type up everything and like all the different things that we like had to know. And then I'd just focus on that instead of my notes, just write everything out about it. So it seemed to work really good for me.

Mary also reported seeking individual assistance from the Pathophysiology professor if she encountered something in her notes that she didn't understand:

> I even went into her [the professor's] office numerous times. I'd say "I'm just not quite sure on this, you know, I wrote down these notes and it just doesn't make sense to me, you know. Can you explain it to me better?" And then she would always, either find an additional handout or find it in the book exactly, like what she was trying to say to me, or in her own words, like from her own nursing practice, so this was what I did quite a few times.

Like Mary, Kayla also sought the professor's individual assistance outside of class in order to clarify the information in her notes:

> [The professor] kinda went through the notes with me and said, you know, when I say this kind of stuff it's not that important as this other piece of information. I knew that was my big problem because I tried to focus on everything. Memorize everything. And then I get things confused and so, talking with her really helped me focus my studying.

A majority (N = 9, 69%) of students reported reviewing their notes multiple times in preparation for exams. Jenny, Marie, Doreen, Kay, Sheila, Misha, Mary, Mindy, and Kayla all reported reviewing their notes more than one time prior to an exam. All of these students were academically successful and five had achieved high success. In contrast, a single episode of notes-review was the only study activity reported by two of three unsuccessful students. Mona reported looking her notes over "the night before the exam." Although Laura did not necessarily wait until the night before an API exam to review her notes, she did not use the strategy of reading them multiple times. Laura said, "Um, the day before or two days before [a test I] just read through the notes and tried to memorize things as fastly as possible."

Cramming is Undesirable, but Sometimes Unavoidable. Mona's strategy of reading her notes "the night before the test," and Laura's intent to "memorize things as fastly as possible" suggests a "cramming" approach to studying for an exam. Mona did not use the term "cramming" when she described how she prepared for exams. However, Laura, confirmed that cramming is exactly what she did, stating, "I would try and cram right before the test." Laura did indicate that she did not consider cramming an effective way to learn or prepare for a test. Other students shared Laura's attitude about cramming,

but may or may not have avoided the tactic. Doreen reported that she "would study a little bit each day" and was adamant about not cramming for API exams. She, along with two other students, studied regularly several days a week and the day before an exam. Doreen said, "I just know that we did not cram." Kay on the other hand tried to study regularly for API, but could not avoid cramming entirely due to other course and extra-curricular demands. Kay described her intentions as follows:

> A lot of times [exams were] on Mondays, so I always had intentions of starting, like, a week before, but that didn't happen very often. ....Friday, Saturday, Sunday nights were pretty much all designated [for studying for API]. Like those were the three days when I hit it really hard.

Studying Allows Me to Visualize My Notes During the Test. Three students, Kay, Misha, and Kayla, expressed the conception that reviewing their notes made it possible to visualize them during an exam when the notes were not physically present. Kay, referring to her revised API notes, describes this conception as follows:

> My typed notes were organized, like, in a way, like, I have certain stuff bolded, you know, and everything under it in that category and so, like, it helped me when I was taking my test, because you know ... I could kinda picture it on the page...

Similarly, Misha also reviewed her revised set of notes in order to prepare for exams in NCAC. Her process of revising her notes, then reviewing them several times before and finally the "night before" the exam, permitted her to see her notes in her mind during the exam, which helped her to select answers for exam items.

Kayla did not study from a revised set of Pathophysiology notes, but expressed a conception of reviewing that was similar to Kay and Misha in that an outcome of successful review was that it allowed her to visualize her notes in her mind during an exam. Kayla's conception was unique in that she also used visualization as a type of

study tactic. Specifically, while studying, she took a break from reading her notes and actually visualized them:

> I kinda like set my notes in my head and then I would review it in my head. ... So then, if, like I would pull away from notes for awhile and try to really think about what I had just looked at and then go back to my notes then and look at it a little more. I am very much, a visual learner, I see it in my head. Like when I'm taking a test, I flip through my notes in my head. And I can see the different signs and see what I wrote.

Studying Involves Self-Testing. Kayla's tactic of attempting to visualize her notes while studying them could be considered a type of self-testing. Other students used more definite means of self-testing. For example, in order to confirm that they had gotten content into their minds, four students allowed themselves to be verbally quizzed by others or used note cards or flash cards to quiz themselves .At least one student reported using practice exams from the CD included with her course textbook.

Jenny reported "taking the practice tests on the CD that comes with the textbook sometimes." Kay and Mindy described using note or flash cards which held the answers to questions they would ask themselves about content. When studying for API exams, Kay explained, "Sometimes I'd use note cards, for like, when we were studying hormones or something like that." The way she tested herself was to read the information on the note card, then without looking at the note care she would "talk out loud" to explain the information for herself. Although she did not describe her tactic specifically, Mindy described creating note or flash cards to help her memorize topics for Pathophysiology exams. Misha also mentioned making note-cards, but did not do so regularly and did not elaborate sufficiently on the tactic to indicate how in what way she used it.

Marie and Doreen used quizzing tactics while studying with other students to test their knowledge of content before exams. Marie said, "Um, right before a test [in API], I try to phrase and ask questions that I can answer. ... Um, I would use friends trying to go over material that way." Doreen's description of how she and her study partners used self-testing provides a clearer conception of how students used it:

> So we got together and we quizzed each other. Um, we'd go through everything and make sure we'd understand it and then we'd quiz each other on it. Um, it helps a ton to hear it from other people's perspective. On Sunday, we would usually try to start at the beginning to see if we could get through to the end. But, we would start at the beginning and I would say, "Explain this to me. ...Tell me what this does." Those kinds of questions.

Studying Requires Taking a Break Right Before the Test. Two students, Doreen and Misha, indicated that it could actually be detrimental to their exam performance if they did not take a break from studying before the exam. Although Doreen and her study partners would sometimes meet briefly on Monday morning before an API test "just to refresh [their] memory," Doreen explained, "We had it pretty well by Sunday night, so we would take Monday off, so that you just don't, you know...jumble it up."

Similarly Misha said, "I never look at my notes before I go into a test." She studied until she felt she "had it" the day before the exam, but stated, "I wouldn't look at [the notes] at all the day of the test because ... my mind needs a break before I go into the test."

<u>Study Tactics</u>

<u>What Study Tactics Do Baccalaureate Nursing Students Use to Learn Course Content and Prepare for Exams?</u>

Interview questions 4 and 5 provided data from which specific study tactics could be gleaned in order to answer research question 16. The average number of study tactics reported by the students in the interview sample was 3.46. Students reported using as few as one study tactic to as many as 5 study tactics. Study tactics and the frequency and percentages of students who used them are presented in Table 25, following which is a more detailed description each tactic and its variations, if there were any.

Table 25

Reported Study Tactics and Number of Students Who Used Them

Tactics	N	%
Reviewed Notes	13	100
Used Textbook	7	54
Used Self-testing	7	54
Did Something Right Away	6	46
Revised Notes	5	38
Collaborated with others	4	31
Selected main ideas	3	23

<u>Reviewed Notes</u>. The most prevalent study tactic was notes review, reported by all of the students in the interview sample. There were several variations on this tactic. Five students (38%) processed their notes in other ways in addition to reviewing them, but for the other eight students (62%), reviewing was the only thing they did with their

notes. Nine students (69%) reviewed their notes more than once, but four (31%) reviewed them only once. Two of the single-time notes reviewers reported additional study tactics such as reading the textbook regularly and listening to audio-tapes of lectures, however the two other single-time notes-reviewers used it as their only study tactic. Since all students used the tactic of notes review to some extent, the tactic of reviewing notes more than once was compared among achievement levels and learning contexts in order to answer research questions 17 and 18.

Used Textbook. Over half (54%) of the students reported using their course textbook to some extent. Four students (31%) read their textbook regularly as a means of receiving content and/or preparing for quizzes; two of those students also referred to the textbook to clarify or verify their lecture notes. A total of five students (38%) used the textbook to clarify or verify their lecture notes, two of which also read it regularly as a means of receiving content.

Used Self-Testing. Some form of self-testing was used by over half (54%) of the students. Self-testing consisted of taking practice exams provided with the textbook ($N = 1$), quizzing one's self or being quizzed by others ($N = 2$), using flash cards to aid and confirm memorization ($N = 3$), and pausing while studying to visualize notes ($N = 1$).

Did Something Right Away. Doing something right away was reported by just under half (46%) of the students. Doing something right away consisted of reviewing lecture notes ($N = 3$), typing lecture notes ($N = 2$), or doing one's homework ($N = 1$). One student reported both reviewing and typing her lecture notes right away.

Revised Lecture Notes. Five students (38%) revised their lecture notes. Revising lecture notes consisted of re-writing or typing notes verbatim (N = 2) or condensing them (N = 3).

Collaborated With Others. Four students (31%) collaborated with others, either with the instructor (N = 2), other students (N = 3), or both (N = 1). Two students reported collaborating on an individual basis with the instructor; one of those students also attended a group exam preparation session presented by the instructor.

Selected Main Ideas. The least prevalent study tactic reported was selecting main ideas, reported by three students (23%). Selecting main ideas was accomplished by highlighting (N = 3) or formatting key words or sections of typed notes in bold to indicate importance (N = 1). Selecting Main Ideas is the only study tactic that was not also identified as a conception in the analysis of data collected to answer research questions 14 and 15.

Table 26 presents the aforementioned study tactics organized according to the tactic categories defined in Chapter 2. No examples of the fourth category, Identifying Relationships and Making Conceptual Links within Content were reported in this study. Doing something right away did not fit any of the categories and thus does not appear in the table.

Table 26

Study Tactics Reported by Students Classified According to Tactic Categories

	Prevalence of Tactics	
Tactic Category and related Tactics	N	%
Repeating, rehearsing, and practicing content		
Re-wrote lecture notes verbatim	2	15
Reviewed notes	13	100
Reviewed notes more than once	9	69
Reviewed notes only, and only once (used no other tactics)	2	15
Reviewed notes only once, but used other tactics	2	15
Read textbook regularly	4	31
Selecting important ideas or concepts from content		
Selected important content by marking text in some way	3	23
Organizing and structuring content		
Created condensed set of study notes	3	23
Verified or clarified notes against textbook	5	38
Read textbook regularly	3	23
Referred to textbook to clarify or verify notes	5	38
Identifying relationships and making conceptual links within content		
No examples of this tactic were reported by students	0	
Evaluating understanding of content		
Quizzed self or was quizzed by others	2	15
Used flash or note-cards	2	23
Answered practice exam questions	1	8
Visualized notes in mind	1	8
Collaborating with others to learn content		
Worked with peers	3	23
Worked with instructor	2	15

<u>Is There a Relationship Between Study Tactics Used by Baccalaureate Nursing Students and Course Subject Area, and if so, What is the Nature of This Relationship?</u>

Students in API reported using the most study tactics followed by students in Patho and NCAC as shown in Table 27.

Table 27

Number of Study Tactics Reported by Students in API, Patho and NCAC

Learning Context	Range	M	SD	95% Confidence Interval	
				Lower	Upper
API (N = 5)	1-5	4.20	1.79	1.98	6.42
Patho (N = 5)	1-5	3.00	1.58	1.04	4.96
NCAC (N = 3)	2-5	3.00	1.73	-1.30	7.30
Total	1-5	3.46	1.66	2.46	4.47

Notes were reviewed more than once by more than half the students in each class, but the highest prevalence of this study tactic occurred in API students. API students also demonstrated the highest prevalence of doing something right away. No NCAC students reported this tactic. Also most prevalent in API students was re-writing or typing one's notes. Smaller proportions of Patho and API students reported this tactic. Use of the textbook to some extent occurred in all courses, but was most prevalent among NCAC students. Not occurring at all among NCAC students was collaboration with others, whereas this study tactic occurred in equal proportions of API and Patho students. Only one student in each course reported some form of selecting main ideas (e.g. highlighting text or notes). API students were most likely to use self-testing, which was used in less

than half of Patho and NCAC students. The frequencies and percentages of study tactics used by students in API, Patho, and NCAC are reported in Table 28.

Table 28

Number and Percentage of Students Reporting Use of General Study Tactics in Each Course

| | Learning Context | | | | | |
| | API (N = 5) | | Patho (N = 5) | | NCAC (N = 3) | |
Tactics	N	%	N	%	N	%
Reviewed notes more than once [a]	4	80	3	60	2	67
Did something right away	4	80	2	40	0	0
Re-wrote or typed notes	3	60	1	20	1	33
Used textbook	2	40	2	40	3	100
Collaborated with others	2	40	2	40	0	0
Selected main ideas	1	20	1	20	1	33
Used self-testing	4	80	2	40	1	33

[a] Statistics for "Reviewed notes more than once" is included in the table instead of the general tactic, "Reviewed notes" since all students reviewed their notes to some extent.

The Spearman correlation between the number of study tactics and learning context (API, Patho, and NCAC) was not statistically significant ($r = .326$, $p = .277$). The differences in the mean number of study tactics used by API, Patho, and NCAC students were not statistically significant based on the results of parametric (See Table 29) and non-parametric tests (See Table 30).

Table 29

Results of One-Way ANOVA Comparing Mean Number of Study Tactics Used by API, Patho, and NCAC Students

	SS	df	MS	F	p
Between Groups	4.431	2	2.215	.769	.489
Within Groups	28.800	10	2.880		
Total	33.231	12			

Table 30

Results of Kruskal-Wallis Test Comparing Mean Number of Study Tactics Used by API, Patho, and NCAC Achieving Students

Learning Context	Mean Rank
API (N = 5)	8.70
Patho (N = 5)	5.80
NCAC (N = 3)	6.17

Note: $\chi^2 = 1.758$, df = 2, p = .415.

Is There a Relationship Between Study Tactics Used by Baccalaureate Nursing Students and Student Achievement, and if so, What is the Nature of This Relationship?

High achievers reported the largest number of study tactics, followed by medium, then low achievers. Statistics describing the number of study tactics reported by high, medium, and low achieving students are presented in Table 31.

Table 31

Number of Study Tactics Reported by High, Medium, and Low Achieving Students

Level of Achievement	Range	*M*	*SD*	95% Confidence Interval	
				Lower	Upper
Low (N =3)	1-5	2.33	2.309	-3.40	8.07
Medium (N = 4)	2-5	3.50	1.732	.74	6.26
High (N = 6)	2-5	4.00	1.265	2.67	5.33
Total	1-5	3.46	1.664	2.46	4.47

Reviewing notes more than once and self-testing were most prevalent among high achieving students, followed by medium, then low achieving students. Half of the high and medium achieving students reported doing something right away. Actual use of this study tactic was reported by only one low achieving student. Half of the high achieving students re-wrote or typed their notes, while smaller proportions of medium and low achieving students reported this tactic. The highest prevalence of textbook use occurred among medium achievers, followed by high, then low achieving students. Collaborating with others (e.g., peers or instructor) was most prevalent among medium achievers, followed by high achievers. No low achieving students reported collaborating with others. Selecting main ideas (e.g. highlighting text or notes) was reported by four students, all of whom were either medium or high achievers. The frequency and percentages of study tactics used by high, medium, and low achieving students are presented in Table 32.

Table 32

Number and Percentage of Students Reporting Use of General Study Tactics by Level of Academic Achievement

| | Level of Academic Achievement | | | | | |
| | High (N = 6) | | Med (N = 4) | | Low (N = 3) [b] | |
Tactics	N	%	N	%	N	%
Reviewed notes more than once [a]	5	83	3	75	1	33
Did something right away	3	50	2	50	1	33
Re-wrote or typed notes	3	50	1	25	1	33
Used textbook	3	50	3	75	1	33
Collaborated with others	2	33	2	50	0	0
Selected main ideas	2	33	2	25	0	0
Used self-testing	5	83	1	25	1	33

[a] Statistics for "Reviewed notes more than once" is included in the table instead of the general tactic, "Reviewed notes" since all students reviewed their notes to some extent. [b] Frequencies and percentages represent the study tactics reported by a single student because the two of three low achieving students reported reviewing their notes only once as their only study tactic.

The correlation between number of study tactics and course grade percentage was not statistically significant ($r = .226$, $p = .457$). The differences in the mean number of study tactics used by high, medium, and low achieving students were not statistically significant based on the results of parametric (See Table 33) and non-parametric tests (See Table 34).

Table 33

Results of One-Way ANOVA Comparing Mean Number of Study Tactics Used by High, Medium, and Low Achieving Students

	SS	df	MS	F	p
Between Groups	5.564	2	2.782	1.006	.400
Within Groups	27.667	10	2.767		
Total	33.231	12			

Table 34

Results of Kruskal-Wallis Test Comparing Mean Number of Study Tactics Used by High, Medium, and Low Achieving Students

Level of Achievement	Mean Rank
Low (N =3)	4.50
Medium (N = 4)	7.25
High (N = 6)	8.08

Note: $\chi^2 = 1.929$, df = 2, p = .381.

CHAPTER 5

DISCUSSION

<u>Overview</u>

In this dissertation work, the approaches to studying of baccalaureate nursing students were investigated using the Approaches to Study Skills Inventory for Students (ASSIST), a self-report measure of (a) Deep, Strategic, and Surface Apathetic study approaches, (b) student preferences for courses and teaching characteristics, and (c) student perceptions of how they are doing in the course for which they complete the ASSIST. The ASSIST was completed by 174 students who were taking one of the following four credit hour classes: (a) Anatomy and Physiology I (API), (b) Anatomy and Physiology II (APII), (c) Pathophysiology (Patho), or (d) Nursing Care of the Adult Client (NCAC). Based on the ASSIST data, students were classified as taking a predominantly Deep, Strategic, or Surface Apathetic approach to studying. The dominant study approach for the entire sample was also determined. Subsequently, relationships between study approaches and other academically-relevant variables (e.g. course grade percentage, cumulative GPA, cumulative ACT, age, employment hours, study hours, and student rating of course performance) were identified. Since the ASSIST does not include items that measure specific study tactics, interviews were conducted with a purposeful sample of 13 students representing high, medium, and low academic success in order to identify study tactics and information about the learning contexts within which students used those tactics.

This chapter features a discussion of the results of analyses that were performed to answer each research question. The discussion is organized according to the order in which those research questions were presented in Chapters 1 and 4. The results are discussed in terms of relevant literature, including the existing research on nursing students' approaches to studying that was reviewed in Chapter 2. Also discussed are sampling and instrumentation issues. Conclusions warranted by the results of quantitative and qualitative analyses are stated, as are relevant implications and recommendations for nursing education and subsequent research. The chapter concludes with a statement of this dissertation's contribution to the science of nursing education.

Discussion of Survey Results

What is the Dominant Study Approach Used by Baccalaureate Nursing Students While Taking API, APII, Patho, and NCAC?

Dominant Study Approach for Sample. The ASSIST quantifies the extent to which students demonstrate three different approaches to studying: Deep, Strategic, and Surface Apathetic The Strategic Approach mean scale score for the sample was 3.82 compared to 3.65 and 3.00 for the Deep and Surface Apathetic scales respectively. Students were classified into dominant study approach groups according to their highest subscale score. The largest proportion of students ($N = 95$, 55%) scored the highest on the Strategic Approach scale while smaller proportions scored highest on the Deep Approach ($N = 45$, 26%) and Surface Apathetic Approach ($N = 33$, 19%) scales. Thus, the pattern of the highest mean scale score resulting for the Strategic Approach, followed by the second highest scale score resulting for the Deep-Approach, and the lowest mean scale score occurring for the Surface Apathetic-Approach that was demonstrated in the

sample was consistent with the prevalence pattern demonstrated in the dominant approach classifications.

The Strategic-Deep-Surface study approach pattern in this study is in contrast to findings reported by other researchers who have investigated approaches to studying among nursing students using the ASSIST (Mansouri et al., 2006), the Approaches to Studying Inventory (ASI; Cowman, 1998), the Revised Approaches to Study Inventory (RASI; Howard et al., 2001), and the Study Process Questionnaire (SPQ; Cantwell, 1997). However, there is little consistency in patterns of study approach dominance in these studies.

Mansouri et al. (2006) used the ASSIST to describe the study approaches of 174 first, second, and third year baccalaureate nursing students at Shiraz University, Iran, where they found that 64% of students adopted the Deep Approach, while the Surface Apathetic Approach was dominant in 22%, followed by the Strategic Approach in 13%. Mean scores for the three ASSIST scales were not reported (Mansouri et al., 2006) so it was not possible to make comparisons to the pattern of dominant Strategic, Deep, and Surface Approach scores found in this dissertation work.

Cowman (1998) found that the highest mean ASI study approach scores in a large sample of students attending nursing school in Northern Ireland and the Republic of Ireland occurred for the Meaning Orientation scale, followed by the Reproducing, Non-Academic, and Strategic Orientation scales. The Meaning, Reproducing, and Strategic Orientation scales are conceptually similar to the Deep, Surface Apathetic, and Strategic Approach scales on the ASSIST. Students in Northern Ireland (NI) were attending

programs situated in colleges whereas the students in the Republic of Ireland (RI) were training in hospital-affiliated apprenticeship-style programs. Considered separately, the pattern of dominance in study approach scores was the same for students in RI, but Reproducing Orientation was dominant for the students in NI, followed consecutively by Meaning, Strategic and Non-academic Orientations. Regarding the "two contrasting patterns of student approaches to learning for Northern Ireland and the Republic of Ireland" (Cowman, p. 906), Cowman asserted that "high levels of examination and assessment in the Northern Ireland programmes are exerting a dominant influence" (p. 906) that was not occurring in the more "well-established learning conditions created through the long tradition of apprenticeship type training [in the Republic of Ireland]" (Cowman, p. 906).

Similar to Cowman's (1998) NI students, Cantwell (1997) reported a dominant SPQ Surface Approach in a sample of fourth year nursing students in Australia. In contrast, Howard, et al. (2001) found RASI Deep Approach scale scores to be highest, followed by Strategic, then Surface scores in a sample of final year diploma in higher education nursing students in the U.K.

The Strategic-Deep-Surface pattern of dominant ASSIST scale scores in this dissertation work repeat the pattern of inconsistency evident in previous similar research. However, the pattern demonstrated in this dissertation work should not be considered unusual for first year students or among students in academic contexts where assessment requires the recollection of facts. Based on their experiences in developing the ASSIST and its ancestors, Entwistle, Tait, and McCune (2000) stated:

High scores on the deep approach are more likely to relate to academic success in the later years of a degree course, and wherever the assessment procedure directly rewards a demonstration of conceptual understanding. However, particularly in the first year, in science departments, and wherever fact-oriented assessment is used, strategic surface approaches may prove adaptive. (p. 34)

In this dissertation study, students in API and APII were first year students who were taking science classes characterized by fact-oriented assessment. Students in Patho and NCAC were also in courses featuring fact-oriented assessment, but were in their second and third years of the program.

The dissimilarity between patterns of study approach dominance reported in this dissertation and patterns reported in previous research on nursing students is difficult to interpret and perhaps most logically should be attributed to cultural and contextual variation from program to program and country to country. Nursing education programs in Australia, Iran, RI, the U.K., and the U.S. are comparable to the extent that they are situated in post-secondary settings. All of these nursing programs except for the apprenticeship-type program in RI are situated in colleges or universities. Deeper exploration of the contextual differences between the various systems and curricula is beyond the scope of this dissertation project. Additional research in similar educational settings in the U.S. is needed in order to reveal any consistency in patterns of study approach dominance, if such patterns exist.

Dominant Study Approaches within Specific Courses. The pattern of Strategic followed by Deep, then Surface Apathetic Approach dominance that occurred for the entire sample was also demonstrated within each course. More specifically the Strategic Approach was the most prevalent approach in NCAC, API, APII, and Patho, followed by

the Deep and Surface Apathetic Approaches respectively, replicating the Strategic-Deep-Surface pattern found in the sample as a whole. When considered in terms of program level or progression, it could also be asserted that cohorts of first, second, and third year students demonstrated a dominant Strategic Approach followed by the Deep and Surface Apathetic Approaches respectively. The stability of study approach dominance over time is consistent with findings in other studies of baccalaureate nursing students (Mansouri et al., 2006; Stiernborg, Guy, & Tinker, 1997).

Mansouri et al. (2006) reported dominance of the Deep Approach for an entire sample of baccalaureate nursing students in Iran, followed by the Surface Apathetic and Strategic Approaches respectively. This Deep-Surface-Strategic pattern was also reported for cohorts of first, second and third year students. Accordingly, statistical analyses "did not detect a relationship between nursing students' stage of study and deep, strategic or surface approaches" (Mansouri et al., p. 355). Similarly, Stiernborg et al. (1997) reported an absence of statistically significant differences in ASI scale scores between first, second, and third year cohorts of nursing students in Australia. The Meaning Orientation was the dominant approach for students in each year of the program, but the Reproducing, Achieving, and Non-Academic Orientations varied from cohort to cohort (Stiernborg et al.).

The stability of study approach scores across program levels (i.e. years in the program) and courses found in this dissertation study and similar research (Mansouri et al., 2006; Stiernborg et al., 1997) invites speculation that patterns of study approach dominance might remain stable over time. However, other similar studies report that

nursing students' study approaches do change from year to year, albeit inconsistently, as they progress through their programs of study (Colgan, 1992; Howard et al., 2001).

Howard et al. (2001) studied two cohorts of nursing students, the first of which completed the RASI at the end of its third and final year of a diploma in higher education (DipHE) program. These students demonstrated a Deep-Strategic-Surface study approach pattern, but reported in interviews that they had changed their approach to studying from a Surface to a Deep approach as they progressed in their program of study and their coursework changed from foundation concepts to illness-related content. In other words, these students changed their approaches to studying as their learning context changed and "the theoretical content of the course became relevant to them" (Howard et al., p. 928). The second cohort consisted of DipHE students who completed the RASI at the beginning and the end of their first year of study. Unlike students in the first cohort, these students demonstrated a Strategic-Deep-Surface pattern of study approach dominance. At the end of year one this pattern changed such that Deep and Strategic scores were equal. In addition, comparison of end-of-year RASI scores to baseline scores revealed a statistically significant decrease in Surface Approach scores indicating "that students relied less on the surface approach as the course progressed" (Howard et al., p. 928).

Colgan (1992), using the Lancaster Inventory (LI), also studied two cohorts of nursing students representing different levels or years of progression in programs of study. The students in the first cohort had just started training, while those in the second cohort were nearing the end of their first year. In contrast to Howard et al. (2001), Colgan reported that a greater proportion of beginning students indicated preferences for the

Deep Approach compared to students in the second cohort who demonstrated a dominant

Surface Approach including a tendency toward Syllabus-Boundness. Like Howard et al.,

Colgan also interviewed a purposeful sample of students who revealed that when they

found content interesting and relevant to taking care of patients, they were more apt to

adopt a Deep Approach, whereas high stakes assignments and exams, fear of failing, and

"limited time available for theoretical instruction" (Colgan, p. 7) promoted the Surface

Approach. Students in Colgan's study also reported adopting different study approaches

for their physiology course compared to sociology or psychology. Apparently physiology

presented content of a more "factual and logical" nature, which fostered a Surface

Approach, whereas sociology and psychology, being "less exact sciences" (p. 7)

permitted a Deep Approach.

Colgan (1992) and Howard et al. (2001) attribute changes in study approaches to

changes in learning contexts and suggest that nursing students tend to adopt deep

approaches to learning when they perceive the course content as relevant to the role of

the nurse. Similarly, Mansouri et al. (2006) reported a statistically significant relationship

between level of interest in nursing and the use of the strategic approach. In Iran, high

school graduates take a nation-wide exam which, based on their performance, qualifies

them to pursue certain programs of study in college; thus it is not necessarily an initial

interest in nursing that leads them to a nursing major. Apparently, as interest ratings for

these nursing students increased, so did their Strategic Approach scale scores (Mansouri

et al.).

The stability of study approach patterns between student levels in this dissertation study and in others (Mansouri et al.; Stiernborg et al., 1997) indicates that students were in learning contexts that did not require or allow them to change their study approaches, which suggests the possibility that the learning contexts themselves remained stable for students. Neither Mansouri et al. nor Stiernborg et al. provided specific details about the curricula at their study settings or the classes their participants were taking when they were studied, which prevents the comparison of learning contexts in those studies and with the context in this dissertation study.

NCAC, Patho, APII, and API represent similar learning contexts in that they are four-credit-hour lecture-style courses that feature multiple-choice exam assessments. NCAC differs considerably from the other courses in that the didactic component is intended to build on what students learned in the AP courses and Patho, among other prerequisite courses. Furthermore, NCAC is a nursing course in which students get to learn how to provide nursing care for patients with various health problems in addition to practicing patient care during the 90-hour clinical component of the course. If students were to change their approach to studying in any of these courses, it seems most likely that they would change during NCAC since it is directly relevant to their career paths, but this was not the case as the strategic approach was dominant regardless of course or program level.

A logical explanation for the consistent dominance of the strategic approach from course to course and between student levels in this dissertation work is that students simply had no choice but to approach studying strategically in order to succeed. All of the

students in the sample were enrolled in 12 or more credit hours at the time they completed the ASSIST. There were 121 students (69.5%) who reported being employed 1-40 or more hours per week. Of students who were employed 53.7% were employed 17 or more hours per week. Beyond employment, additional personal and extracurricular demands on students were not assessed, but based on their full time course loads and employment data, and given the specific learning contexts, it seems reasonable that these students had neither the time nor the opportunity to take a Deep Approach to studying even if they had desired or intended to.

In summary, the findings from this particular aspect of this study contribute nothing toward establishing a research tradition with regard to patterns in study approaches over time and from course to course. Replication of this study in similar settings and with similar populations of students is needed in order to establish such a tradition since it is probably impractical to compare results from studies conducted in different countries and different degree programs using different, albeit conceptually similar self-reports of study approaches. Furthermore, responses to self-report measures in previous similar studies represent the respondents' general or cumulative approaches to studying rather than their context or course-specific approaches, whereas students in this dissertation study were asked to provide course-specific responses to the ASSIST.

Dissonant Study Approaches. One student demonstrated dual-dominance in study approach, averaging 3.50 on both the Deep and Surface Apathetic scales and 3.45 on the Strategic Approach scale. This student's study approach scale scores were omitted from further analyses in which students were grouped for comparison according to their

dominant study approach. Nevertheless, the student's somewhat antithetical study approach warrants comment because she failed the course for which she completed the ASSIST and also participated in the qualitative component of this study. This student's interview responses indicated several conceptions about studying that were in common with highly successful students, a finding that will be explored further in the discussion of qualitative results.

One might logically expect study approach dominance for a failing student to feature the Surface Apathetic Approach as the highest mean scale score, followed by the Deep and Strategic Approach scores in any order. Research does not necessarily support this notion. For example, Meyer, Parsons, and Dunne (1990) found that some academically weak first year engineering students exhibited "disintegration" or alteration in expected study approach patterns. This phenomenon of study approach dissonance, or pattern disintegration has also been reported in studies of nursing students in Australia (Stiernborg et al., 1997) and South Africa (Meyer & Dunne, 1991). Meyer and Dunne (1991) concluded "that failing students manifest approaches to studying that are, in some respects, conceptually difficult to interpret" (p. 497). Entwistle and Tait (1991) and Entwistle, Tait, and McCune (2000) have also observed contrasting dominance in study approaches in academically weak students and suggest the contrast may represent *dissonance* in their intentions and abilities:

> This phenomenon suggests that the weak academic performance of some students lies in a mismatch between the deep outcomes they are seeking and their ability to achieve them, or perhaps in a tension between personal intentions and either the general learning environment provided or the pressures to conform to external assessment requirements. (p. 45)

In order to examine in greater depth differences in study approaches between failing and successful students, the mean differences between their three main scale scores were compared. In other words, failing and successful students were compared on the mean difference between their Deep and Strategic, Deep and Surface, and Strategic and Surface scale scores. The mean differences between each of the three scale scores were smaller for students who had failed compared to the mean differences between each of the three scale scores for successful students. The mean differences in scale scores for successful and unsuccessful students are presented in Table 35.

Table 35

Mean Differences in Scale Scores for Successful and Unsuccessful Students

Scales Compared	Failed (N = 29)		Successful (N = 145)	
	M	SD	M	SD
Deep – Strategic	.204	0.53	-.238	0.45
Deep – Surface	.172	0.75	.748	0.99
Strategic – Surface	-.032	0.88	.986	0.98

The mean difference between each scale score for successful students was compared to the mean difference between each scale score for unsuccessful students using independent 2-tailed t-tests. Successful students' mean differences were found to be statistically different than the mean differences of unsuccessful students. Specifically, the difference between scale scores was significantly greater for successful students

compared to unsuccessful students. Table 36 displays the results of this analysis. This finding suggests that the magnitude of the difference between scale scores was lower for failing students compared to successful students. In other words, there was a larger difference between mean scale scores for successful students, while the magnitude of the difference between mean scale scores among failing students was smaller. These differences prompted speculation as to whether differences between scale scores were sufficiently large or important enough to warrant classifying students into a dominant study approach groups, so additional analyses were conducted to evaluate the strength of study approach dominance for the entire sample.

Table 36

Comparison of Successful and Unsuccessful Students on Mean Differences between Scale Scores

Scale Scores Compared	t	df	p	M Difference	95% Confidence Interval	
Strategic-Deep	4.635	172	.000 [a]	0.44	0.25	0.63
Surface-Deep	-2.972	172	.003 [b]	-0.58	-0.96	-0.19
Surface-Strategic	-5.174	172	.000 [c]	-1.02	-1.41	-0.63

[a] The significant p value indicates the mean difference between strategic and Deep Approach mean scale scores was significantly larger for successful students than it was for unsuccessful students. [b] The significant p value indicates the mean difference between Surface Apathetic and Deep Approach mean scale scores was significantly larger for successful students than it was for unsuccessful students. [c] The significant p value indicates the mean difference between Surface Apathetic and Strategic Approach mean scale scores was significantly larger for successful students than it was for unsuccessful students.

Strength of Study Approach Dominance. In many cases, students' designation as Deep, Strategic, or Surface Apathetic dominant was based on a relatively small difference between the highest mean scale score and one or both of the other two scale scores. For example, the average difference between Deep and Strategic Approach mean scale scores for the 45 students designated as Deep Approach dominant was 0.37 (SD = 0.28). The smallest difference between Deep and Strategic mean scale scores in the group of students designated as Deep Approach dominant was 0.011 the largest difference was 1.53. Deep, Strategic, and Surface Apathetic mean scale scores and mean scale score differences are presented for each dominant study approach group in Table A11 (Appendix A).

In order to better understand the magnitude of students' dominant study approach mean scale scores, and to validate the appropriateness of designating students as Strategic, Deep, or Surface Apathetic dominant, the groups' dominant mean scale scores were compared. Students classified as Deep Approach dominant had significantly higher Deep Approach mean scale scores than students classified as Strategic or Surface Apathetic dominant. Similarly, students classified as Strategic Approach dominant had significantly higher Strategic Approach mean scale scores than students classified as Deep and Surface Apathetic Approach dominant. Likewise, students classified as Surface Apathetic Approach dominant had significantly higher Surface Apathetic Approach mean scale scores than students classified as Strategic or Deep Approach dominant. The results of one-way ANOVA comparing the dominant study approach scores among each of the

three groups are presented in Table 37. Post hoc Tukey HSD comparisons between each group are presented in Table A12 (Appendix A).

Table 37

Comparison of Differences between Dominant Mean Scale Scores and Non-dominant Mean Scale Scores

Scale	SS	df	MS	F	P
Deep Approach Scale Score Mean					
Between Groups	17.012	2	8.506	43.015	.000 [a]
Within Groups	33.617	170	.198		
Total	50.630	172			
Surface Approach Scale Score Mean					
Between Groups	27.072	2	13.536	57.350	.000 [b]
Within Groups	40.124	170	.236		
Total	67.195	172			
Strategic Approach Scale Score Mean					
Between Groups	25.301	2	12.650	71.108	.000 [c]
Within Groups	30.244	170	.178		
Total	55.545	172			

[a] Significant p value indicates the mean Deep Approach (DA) scale score was significantly higher in the DA dominant group than the DA scale scores in the Surface Apathetic Approach (SAA) and Strategic Approach (SA) dominant groups. [b] Significant p value indicates that the mean SAA scale score was significantly higher in the SAA dominant group than the SAA scale scores in the SA and DA dominant groups. [c] Significant p value indicates that the mean SA scale score was significantly higher in the SA dominant group than the SA scale scores in the SAA and DA dominant groups.

Paired samples t-tests were also run to compare each group's dominant study approach mean scale score to its two non-dominant approach scale scores. Each group's dominant study approach mean scale score was significantly higher than its two non-dominant approach mean scale scores (See Table A13, Appendix A).

Based on these between and within group findings, it was concluded that designation of students into dominant study approach groups and the subsequent comparison of those groups was justified.

Is There a Relationship Between Study Approaches Used by Baccalaureate Nursing Students and Academic Success as Indicated by Final Course Grade Percentage, and if so, What is the Nature of the Relationship?

Strategic Approach mean scale scores were correlated both significantly and moderately with course grade percentages indicating that the higher the Strategic Approach score, the more points a student earned in the course. Similarly, there was a statistically significant, but small correlation between Deep Approach mean scale scores and final course grade percentages indicating that students who had higher Deep Approach scores also earned more points toward their final course grades. Surface Apathetic Approach mean scale scores and course grade percentages were moderately and negatively correlated, suggesting that students with higher scores on the less desirable Surface Apathetic Approach scale earned fewer points toward their final course grades. These findings are consistent with those of previous similar studies (Howard et al., 2001; Meyer & Dunne, 1991; Snelgrove & Slater, 2003; Stiernborg et al., 1997). Furthermore, the significant correlations between the Deep, Strategic, and Surface Apathetic Approach scores also support the theoretical basis of the ASSIST, which

proposes that successful students score low on the Surface Apathetic scale relative to the

Deep and Strategic scales (Centre for Research on Learning and Instruction, 1997).

<u>Is there a Relationship Between Study Approaches Used by Baccalaureate Nursing
Students and Cumulative GPA Achieved Prior to the Semester During Which the Student
Participated in the Study, and if so, What is the Nature of the Relationship?</u>

There was a statistically significant moderate correlation between Strategic

Approach mean scale scores and GPA, suggesting that the higher students' Strategic

Approach scores were, the higher their GPAs were likely to be. A positive association

between Strategic Approach scores and GPA has also been reported previously

(Brodersen, 2003; Mansouri et al., 2006; Snelgrove & Slater, 2003). Similarly, there was

a small, but statistically significant correlation between Deep Approach mean scale

scores and cumulative GPA, indicating that students who had higher GPAs going into the

course demonstrated higher Deep Approach scores. The positive relationship between

Deep Approach and GPA has been demonstrated in previous studies (Brodersen, 2003;

Cantwell & Moore, 1998; Snelgrove & Slater, 2003). There was a small negative, but

statistically significant correlation between Surface Apathetic Approach mean scale

scores and GPA, indicating that students with higher Surface Apathetic Approach scores

were more likely to begin the course with a lower GPA. Surface Approach scores have

also demonstrated negative correlations with GPA in previous research (Snelgrove &

Slater, 2003). These findings support the notion that successful students score low on the

Surface Apathetic scale relative to the Deep and Strategic scales (Centre for Research on

Learning and Instruction, 1997).

Is There a Relationship Between Study Approaches Used by Baccalaureate Nursing Students and Cumulative ACT Score Achieved Prior to the Semester During Which the Student Participated in the Study, and if so, What is the Nature of the Relationship?

Correlations between cumulative ACT score and Deep, Strategic, and Surface Apathetic mean scale scores were not statistically significant. Relationships between ACT and approaches to studying have not been reported in previous investigations in samples of nursing students. This finding however, is somewhat comparable to the results of one previous study in which the academic qualifications of nursing students in the U.K. were not found to correlate with approaches to studying (Howard et al., 2001). Based on these findings, it is concluded that cumulative ACT score is not related to approaches to studying.

Is there a Relationship Between Study Approaches Used by Baccalaureate Nursing Students and Age in Years, and if so, What is the Nature of the Relationship?

There was a positive, moderate correlation between Age and Deep Approach mean scale scores indicating that older students demonstrated preferences for Deep Approaches to studying, a finding that is consistent with those of previous studies (Brodersen, 2003; Howard et al., 2001). Previous studies have also reported significant correlations between age and the Strategic Approach (Brodersen, 2003; Howard et al.), but a relationship between age and the Strategic Approach was not supported in this dissertation work. Surface Apathetic mean scale scores were moderately and negatively correlated with age, indicating that younger students demonstrated higher Surface Apathetic Approach scores, a finding that has been demonstrated in previous research (Howard et al.).

Since age was positively correlated with Deep Approach mean scale scores and negatively correlated with Surface Apathetic Approach mean scale scores, and since it would not be unusual for students in NCAC to be older than students in Patho, APII, and API simply due to course sequencing, it was hypothesized that students in NCAC would be older than students in the other three courses. Likewise, it was hypothesized that students in Patho were older than students in APII, who were older than students in API. Based on descriptive statistics, these hypotheses were true, as shown in Table 38, however the differences in the ages of students across courses did not achieve statistical significance at the .05 level (F = 2.29, df = 3, p = .084).

Table 38

Mean Age of Students by Course

Scale	*m*	*Range*	*SD*
NCAC	24.31	31 (20-51)	7.81
Patho	23.33	36 (19-55)	6.77
APII	23.00	36 (19-55)	9.41
API	21.02	19 (18-37)	3.99

The lack of a statistically significant difference in the ages of students in each class or program level suggests that the correlation between age and mean study approach scores is not a function of student progression through the nursing program. However, relationships between age and study approach do suggest the occurrence of changes over time. It may be that as students age, the accumulation of academic and/or life experiences

in general has some impact on cognitive and emotional maturity that is reflected in study approach scores. Since college and life experience beyond the nursing program were not assessed in this study, their relationship to age and mean scale scores cannot be explored further quantitatively.

In this dissertation study, age was also positively correlated with course grade percentages ($r = .213$, $p = .005$). This finding is consistent with previous research in which age has been found to relate positively to academic performance (Ofori, 2000; Ofori & Charlton, 2002; Salamonson & Andrew, 2006). Eyres, Loustau, and Ersek (1992, p. 176) did a qualitative study of "ways of knowing" (citing the work of Belenky, Clinchy, Goldberger, & Tarule, 1986) in beginning students and observed that female nursing students age 23 and older who have "had a variety of life experiences, including raising a family and pursuing other occupations" demonstrated more highly developed "ways of knowing" than their younger peers. Eyres et al. concluded that the older students' various life experiences facilitated their ability to cope with the complex challenges presented by "some of the theoretical and scientific content of nursing" (Eyres et al., p. 180).

The findings from this dissertation work and the findings from previous research suggest that the chronological maturity of nursing students has a positive impact on academic performance and approach to studying. There is reason to speculate that the accumulation of life and previous occupational experience promotes cognitive maturity, which in turn facilitates academic success.

Is there a Relationship Between Study Approaches Used by Baccalaureate Nursing
Students and Number of Hours Spent Each Week in Paid Employment, and if so, What is
the Nature of the Relationship?

There was a statistically significant moderate negative correlation between the

number of hours students spent in paid employment each week and their Strategic

Approach mean scale scores indicating that the fewer hours students worked, the higher

their Strategic Approach scores were. This finding has not been reported in previous

investigations of approaches to studying in nursing students. Correlations between hours

worked and Deep and Surface Apathetic mean scale scores were not statistically

significant, which is consistent with previous research (Stiernborg et al., 1997).

In methodological studies of the ASSIST, Strategic Approach scores have

correlated with "high academic performance and, more weakly, with lack of interference

in studying from social or sporting activities" (Centre for Research on Learning and

Instruction, 1997, p. 5) while the Surface Apathetic Approach subscale, Fear of Failure

has been linked to "inadequate prior knowledge (particularly in mathematics) and, less

strongly, with the effects of studying of doing paid work or of personal relationships"

(Centre for Research on Learning and Instruction, p. 5). Although these findings were not

supported in this dissertation work, it seems reasonable to conclude that students' habits

of time management, organized studying, alertness to assessment demands, and intention

to achieve a high grade in the class were adversely affected by the number of hours spent

in paid employment (Centre for Research on Learning and Instruction, p. 7).

Hours worked was not significantly correlated with course grade percentage ($r = .123$, $p = .109$) and thus, speculation that the more hours a student works, the lower his or

her course grade percentage will be is not warranted. This finding is in contrast to one previous study in which it was found that "nursing students who engaged in more than 16 hours of part-time employment had statistically significant lower mean scores in pathophysiology than those who were not in paid employment" (Salamonson & Andrew, 2006, p. 346).

Is There a Relationship Between Study Approaches Used by Baccalaureate Nursing Students and Number of Hours Spent Each Week Studying, and if so, What is the Nature of the Relationship?

There was a negative, small statistically significant correlation between number of hours spent studying each week and Surface Apathetic mean scale scores, suggesting that the higher students' Surface Apathetic scores were, the less time they spent studying. A positive moderate significant correlation was found between number of hours spent studying and Deep Approach scores, which is consistent with previous research (Stiernborg et al., 1997). A positive moderate correlation between number of hours spent studying and Strategic Approach mean scale scores was also demonstrated.

The correlations between study hours and the Deep and Strategic Approach scores indicate that students who had higher Deep and Strategic Approach scores spent more time studying. Relationships between time spent studying and Surface Apathetic or Strategic Approach scores have not been previously reported in studies of nursing students. Based on these findings there is reason to speculate that students who demonstrate a preference for a Deep or Strategic Approach to studying will spend more time studying, which may contribute directly to their academic success. A Pearson correlation coefficient was calculated to explore this potential relationship, which was

supported by a small significant positive correlation between hours spent studying and final course grade percentages ($r = .197$, $p = .010$).

<u>Is There a Relationship Between Study Approaches Used by Baccalaureate Nursing Students and Rating of Performance in the Course, and if so, What is the Nature of the Relationship?</u>

Significant correlations were found between students' course performance ratings and each of the study approach mean scale scores. The small positive correlation between ratings on Deep Approach mean scale scores indicates that students demonstrating higher Deep Approach scores also reported higher course performance ratings. Similarly, there were moderate positive correlations between performance ratings and Strategic Approach scores indicating that students with higher Strategic Approach scores also reported higher performance ratings. Also moderately, but negatively correlated with course performance ratings were Surface Apathetic scores, indicating that the higher students' Surface Apathetic scores were, the lower their course performance ratings were. Comparable findings have not been reported in previous investigations of approaches to studying in nursing students. These findings support the theoretical basis of the ASSIST and SAL theory.

<u>What Types of Course Characteristics and Teaching Methods Do Baccalaureate Nursing Students Prefer?</u>

<u>Preferences for Courses and Teaching Methods that Support A Surface Approach.</u> Items on the Transmitting Information scale received the highest ratings. Since the Transmitting Information scale contains items that relate to the Surface Apathetic Approach to studying, it appears that students favor courses and teaching methods that support a Surface Approach to studying. Over 90% of the students indicated that they

definitely liked or liked to some extent all four items on the Transmitting Information scale, which indicates that they favor (a) instructors who tell them exactly what to write in their notes during lecture, (b) exams or tests that cover only the material students wrote down in their lecture notes, (c) having it made very clear which books they need to read, and (d) books that provide definite facts and information that they can learn easily.

In this dissertation work it was found that age was positively correlated with Deep Approach mean scale scores and negatively correlated with Surface Apathetic Approach mean scale scores. It was also shown that, as a function of program progression and course sequencing, the mean age of students in lower level courses (e.g. API) was lower than the mean age of students in higher level courses (e.g. NCAC), however the age differences were not statistically significant. Nevertheless, based on the aforementioned correlations between age and the Deep and Surface Apathetic Approaches, it was hypothesized that the proportions of students indicating preferences for courses and teaching methods that support a Surface Approach would be greater in lower level courses than in higher level courses. To test this hypothesis students who definitely liked, or liked to some extent, course characteristics or teaching methods on the Surface Approach—Transmitting Information scale were grouped into a single "positive" group for comparison to a single "neutral or negative" group of students who were unsure, disliked to some extent, or definitely disliked the characteristics or methods represented by the items on the Transmitting Information scale.

The proportions of "positive" and "neutral or negative" responses were not significantly different for any Transmitting Information scale items when comparing API,

APII, Patho, and NCAC. The results of these analyses are presented in Table 39. Thus, using class as an indicator of program level and program level as an indicator of age did not reveal age differences in preferences for course characteristics and teaching methods that support a Surface Approach and did not support the notion that students' preferences for courses and teaching methods that promote a Surface Approach to learning are more prevalent at younger ages or in earlier years of the program.

Table 39

Comparison among Courses of Positive and Neutral or Negative Responses to Transmitting Information Items

Subscale Item	$\chi^{2\,a}$	df	p
a. Instructors who tell us exactly what to put down in our notes.	5.738	3	.125
d. Exams or tests which need only the material provided in our lecture notes.	7.126	3	.068
e. Courses in which it's made very clear just which books we have to read.	1.816	3	.611
h. Books which give you definite facts and information which can easily be learned.	2.099	3	.552

Note. To simplify statistical comparison, "like to some extent" and "definitely like" responses were collapsed into a single category and compared to a single category containing "unsure," "dislike to some extent," and "definitely dislike" responses. [a] Likelihood ratio chi square is reported.

Regardless of program level, additional analysis did reveal significant negative correlations between age the Surface Approach—Transmitting Information scale score (Rho = -.192, p = .011). Analysis of individual items on this scale showed that age was correlated significantly and negatively with item a, "Instructors who tell us exactly what

to put in our notes," and item d., "Exams or tests which need only the material provided

in our lecture notes." The results of correlations between age and items on this scale are

presented in Table 40.

Table 40

Correlation between Age and Items on Transmitting Information Scale

Item Description	Rho	p (2-tailed)
a. Instructors who tell us exactly what to put down in our notes	-.239	.001
d. Exams or tests which need only the material provided in our lecture notes	-.269	.000
e. Courses in which it's made very clear just which books we have to read	-.143	.060
h. Books which give you definite facts and information which can easily be learned	-.117	.126

These findings do not provide strong support for the notion that there will be a

decrease in preferences for course characteristics and teaching methods that support a

Surface Approach as students progress to higher levels in the program, but there is some

support for a relationship between age and such preferences. What these findings do

suggest is that students desire certainty in the content they are required to deal with and

they do not want to search for that content independently. These findings are comparable

to recent research by Walker and colleagues (Walker et al., 2006) on the generational age

differences in baccalaureate nursing students' preferences for teaching methods. Walker

et al. classified students as generation X or Y based on whether they were born during the

years of 1965-1979 (Generation X) or since 1980 (Generation Y). In addition to revealing

no statistically significant differences in the preferences for teaching methods among students classified as Generation X (age 25 and older) and Generation Y (ages 18-24), Walker et al. also found that students were not interested in independently seeking or constructing knowledge, but preferred to listen to lectures accompanied by a corresponding lecture handout during class. Likewise, students in this study did not prefer group work (Walker et al., 2006).

Preferences for Courses and Teaching Methods that Support a Deep Approach. Despite strong preferences for courses and teaching methods that support a Surface Approach to learning, there were also strong preferences for courses and teaching methods that supported a Deep Approach based on the findings that at least half, or more than half of the students definitely liked, or liked to some extent, three of the four items on the Supporting Understanding scale. A strong majority of students (68-86%) reported definitely liking, or liking to some extent (a) exams that let them show that they have thought about the course material for themselves and (b) instructors that demonstrated for students how they did their thinking and who encouraged students to think for themselves. Half the students (49.5%) demonstrated a positive response toward a third item, indicating that they either definitely liked, or liked to some extent, books that challenged them and provided them with explanations that went beyond the lecture material. There was only one item on the Supporting Understanding scale for which a majority of students indicated negative preferences; specifically, 61% indicated they definitely disliked, or disliked to some extent being encouraged to read independently beyond the assigned course readings.

Since age and Deep Approach mean scale scores were positively correlated in this study, and due to the fact that students in NCAC were older than students in Patho, API, and APII due to program sequencing and progression, it was hypothesized that more students in NCAC might demonstrate a greater frequency of positive Deep Approach preferences than students in the other three courses. To test this hypothesis, students who definitely liked, or liked to some extent, course characteristics or teaching methods on the Deep Approach—Supporting Understanding scale were grouped into a single "positive" group for comparison to a single "neutral or negative" group of students who were unsure, disliked to some extent, or definitely disliked the characteristics or methods represented by the items on the Supporting Understanding scale. The proportions of "positive" and "neutral or negative" responses were not significantly different for any Supporting Understanding scale items when API, APII, Patho, and NCAC were compared. The results of these comparisons are presented in Table 41.

Based on these analyses, it appears that there is no support for the notion that students' preferences for courses and teaching methods on the Deep Approach—Supporting Understanding scale are more prevalent at younger ages or in earlier years of the program. Additional analysis, however, did reveal a significant positive correlation between age and the Deep Approach—Supporting Understanding scale score (Rho = .179, p = .018). The only individual item on this scale for which a significant positive correlation was found was item c, "Exams which allow me to show that I've thought about the course material for myself." The results of correlations between age and items on this scale are presented in Table 42.

Table 41

Comparison among Courses of Positive and Neutral or Negative Responses to Items on the Supporting Understanding Scale

Scale Items	$\chi^{2\,a}$	*df*	*p*
b. Instructors who encourage us to think for ourselves and show us how they themselves think	1.774	3	.621
c. Exams, which allow me to show that I've thought about the course material for myself.	3.902	3	.272
f. Courses where we're encouraged to read around the subject a lot for ourselves.	1.470	3	.689
g. Books which challenge you and provide explanations which go beyond the lectures.	1.597	3	.660

Note. To simplify statistical comparison, "like to some extent" and "definitely like" responses were collapsed into a single category and compared to a single category containing "unsure," "dislike to some extent," and "definitely dislike" responses. [a] Likelihood ratio chi square is reported.

Table 42

Correlation between Age and Items on Supporting Understanding Scale

Scale Item	*Rho*	*p* (2-tailed)
b. Instructors who encourage us to think for ourselves and show us how they themselves think	.110	.147
c. Exams which allow me to show that I've thought about the course material for myself	.226	.003
f. Courses where we're encouraged to read around the subject a lot for ourselves	.045	.558
g. Books which challenge you and provide explanations which go beyond the lectures	.123	.106

Strong preferences for courses and teaching methods that support a Surface Approach to studying were evident in this study, yet there was evidence of preferences for courses and teaching methods that support a Deep Approach to learning as well. Assuming the two teaching preference scales are designed to be polar opposites, then the strong preferences for items on both scales is somewhat antithetical given the fact that neither the Deep nor Surface Apathetic Approach scales demonstrated dominance in the sample. These contradictions might possibly be explained by the nature of the learning context and the demands of students' personal lives and their attempts to strike a compromise between the desire to take a Deep Approach and the need to be Strategic.

Researchers agree that "context can influence how students study" (Hadwin, Winne, Stockley, Nesbit, & Woszczyna, 2001, p. 477). Substantial support for this notion has been generated by both nursing education research (August-Brady, 2005; Colgan, 1992; Cowman, 1998; Mansouri et al., 2006; Meyer & Dunne, 1991; Snelgrove & Slater, 2003; Gibbs, Lucas, & Spouse, 1997) and by education research in general (Biggs et al., 2001; Entwistle, 2000; Entwistle & McCune, 2004, Entwistle & Peterson, 2004). Consequently, while it is likely that students may definitely like, or like to some extent, courses and teaching methods that support their understanding of course content, perhaps the combined effect of the learning context and the demands of their personal lives require them to prefer courses and teaching methods that facilitate a Surface Approach to studying. Perhaps the dominance of the Strategic Approach in this sample is a function of students' attempts to balance their need to satisfy the demands of the learning context with their desire to learn things well. Maybe they *prefer* teaching methods and strategies

that support a Deep Approach, but the competing demands on their time and the nature of assessment in their courses forces the *need* for teaching methods and preferences that support a Surface Approach.

The only demand on students' time that was explored in this dissertation work was hours spent each week in paid employment, but no significant correlations were found between this variable and either of the two scale scores representing preferences for course characteristics and teaching methods. Furthermore, no significant correlations were identified between hours spent in paid employment and any of the individual items on either scale. The results of these analyses are presented in Table A14 (Appendix A).

Is the ASSIST a Valid and Reliable Instrument for Assessing the Study Approaches of Baccalaureate Nursing Students at Allen College?

Internal Consistency Reliability. Cronbach's alpha coefficients for the Deep, Strategic, and Surface Apathetic subscales of the ASSIST were 0.83, 0.87, and 0.83 respectively and ranged 0.52-.81 for the 13 subscales. The developers of the ASSIST claim alpha coefficients of 0.50 or higher are acceptable for scales on instruments of its length and type (Tait, Entwistle, & McCune, 1998, pp. 264, 266). Alpha coefficients of .83-.87 for the main scales indicate moderate to substantial internal consistency reliability (Jacobson, 2004, p. 8). The lower alpha coefficients for the subscales are expected because they are comprised of subsets of items from the entire instrument (Jacobson, p. 9). Alpha coefficients produced by the main scales are consistent with those reported in a similar recent study (Mansouri et al., 2006) in which the ASSIST was used to measure approaches to studying in nursing students in Iran. Alpha coefficients for the main scales and subscales in this study are also consistent with those reported in the methodological

studies conducted during the development of the ASSIST, with the exception of the

Strategic Approach—Alertness to Assessment Demands subscale, which was not

included in those studies although in their conclusions it was recommended that the

subscale be reinstated (Tait, Entwistle, & McCune, 1998; Entwistle, Tait, & McCune,

2000). Based on the alpha coefficients for the scales and subscales of the ASSIST in this

dissertation work, it is concluded that the instrument demonstrated moderate to strong

internal consistency reliability.

Construct Validity. The construct validity of the ASSIST was evaluated with

confirmatory factor analysis (CFA; Kahn, 2006). The model resulting in the best model

fit featured (a) all Deep Approach subscale items loading at 0.50 or more (.50-.96) on the

1st factor, (b) all Surface Apathetic Approach variables loading at 0.40 or above (.40-.72)

on the 3rd factor, and (c) all but one of the Strategic Approach variables loading at .48 or

more on the 2nd factor (.26-.83). Strategic Approach—Alertness to Assessment Demands

loaded low at .26.

The Strategic Approach—Monitoring Effectiveness subscale loaded at .48 on the

factor with the other Strategic Approach subscales, but was also allowed to load at .28 on

the same factor as the Deep Approach subscales because it was moderately correlated

with Deep Approach—Use of Evidence. This finding is consistent with previous research

in which the Monitoring Effectiveness subscale loaded on the Deep as well as the

Strategic Approach subscale of the Revised Approaches to Studying Inventory (RASI;

Tait et al., 1998, p. 256; Centre for Research and Instruction, 1997, p. 4).

Determining the extent to which CFA confirms the expected factor structure of an instrument requires evaluation of goodness of fit indices, which are generated by statistical programs such as LISREL©. Goodness of fit refers to the extent to which the ASSIST data conforms to its hypothesized factor structure (Kahn, 2006, p. 702). Minimum fit indices that should be reported include:

> (a) the chi square with corresponding degrees of freedom and level of significance, (b) the RMSEA [root mean square error of approximation] with corresponding 90% confidence intervals, (c) the CFI [comparative fit index], and (d) the SRMR [standardized root mean square residual]. (Worthington & Whittaker, 2006, p. 833)

The Minimum Fit Function chi-square is statistically significant indicating poor model fit, however Kahn (2006) explains that the chi square computation incorporates sample size and "because large samples are necessary for CFA, there is a high likelihood of the chi-square being significant even when the model provides a good fit to the data" (p. 707). The sample size in this dissertation study was not large (N = 174), but Kahn recommends basing conclusions about model fit on "fit indices that sample size does not adversely impact" (p. 707). In addition to RMSEA, CFI, and SRMR, Kahn recommends the non-normed fit index (NNFI). These fit indices, all indicating good model fit, are reported in Table 43 along with chi-square statistics.

Model modification indices revealed a large standardized residual of 6.41 for Strategic Approach—Alertness to Assessment Demands and Deep Approach—Seeking Meaning, but the error terms for these two variables were not significantly correlated. Since the residual was markedly larger than the standardized residuals for all other variable pairs (See Table A15, Appendix A) it "indicates that there is a relationship

between the two variables, but that the relationship has not been accounted for in the model as it is currently specified" (Banchard & Beard, 1995 as cited in Aroian & Norris, 2005, p. 370). In this case, the maximum modification index resulting for Alertness to Assessment Demands and the Deep Approach scale was 9.69, indicating that if this variable had been freed in the model to load on the same scale as the other Deep Approach subscales, the Chi Square goodness of fit statistic could have been reduced by 9.69. However, since there was no correlation between the error terms for Strategic Approach—Alertness to Assessment Demands and Deep Approach—Seeking Meaning, this change in the model did not seem to be theoretically justified and was not run.

Table 43

Confirmatory Factor Analysis Goodness of Fitness Indices

Good Fit Statistics	Interpretation
Minimum Fit Function $\chi^2 = 75.38$, $df = 56$, $p = .043$	$p < .05$ indicates poor model fit.
CFI = 0.99	Value >.95 indicates good fit.
RMSEA = 0.043; 90% confidence interval = 0.0; 0.068, $p = 0.65$	Should be small (<.60) and include 0 in its confidence interval.
SRMR = 0.051	Value of 0.08 or lower indicates good fit.
NNFI = 0.98	Value >.95 indicates good fit.

Based on the factor loadings and goodness of fit indices, with the exception of the Strategic Approach—Alertness to Assessment Demands subscale, the ASSIST demonstrates acceptable construct validity within the sample of nursing students in this

dissertation work. This conclusion is warranted because all other subscales loaded with moderate magnitude at .40 or higher on their respective factors as expected theoretically (Aroian & Norris, 2005; Worthington & Whittaker, 2006). Furthermore, with the exception of the Minimum Fit Function Chi Square, the final model generated numerous goodness of fit indices demonstrating good model fit (Kahn, 2006).

According to Entwistle et al. (2000) and Tait et al. (1998), Alertness to Assessment Demands has been alternately dropped and reinstated in methodological studies of the Revised Approaches to Studying Inventory (RASI) due to low factor loadings (.38) and alpha coefficients (.44), which have been attributed to the fact that the RASI was completed "by first-year students before they had had much if any, experience of being assessed" (Tait et al., 1998, p. 264). Alertness to Assessment Demands was included among the Strategic Approach subscales on the version of the ASSIST provided by its developers for this dissertation research, but alpha coefficients and factor loadings have not been reported in prior methodological research on the ASSIST (Entwistle, Tait, & McCune, 2000; Tait, Entwistle, & McCune, 1998; Centre for Research on Learning and Instruction, 1997). Although Alertness to Assessment Demands demonstrated acceptable internal consistency reliability in this study, as indicated by a Cronbach's alpha coefficient of .59, its weak loading on factor 2 along with the other strategic approach variables suggests that it could be dropped from future administration of the ASSIST in samples of nursing students like the one featured in this dissertation work.

In this dissertation study a large number of students (N = 73) were in their first year of study in the nursing program, based on the assumption that students in API and

APII were first year Allen College students, but their prior academic experience in higher education was not known, so there is no statistical data that can be used as a basis for attributing the low factor loading of Alertness to Assessment Demands to student inexperience with assessment.

Over half (55%) of the students in this study were Strategic Approach dominant, but a large proportions of students (79-89%) reported agreeing or agreeing somewhat with each of the items on the Alertness to Assessment Demands subscale, indicating that they (a) kept in mind how best to impress the person who was grading their assignment, (b) looked carefully at the instructor's comments on graded work to see how to get higher grades, (c) kept in mind who would be grading their assignment and what that person would be looking for, and (d) kept an eye open for what the lecturer seemed to think was important and concentrated on that. The high response rates for the items on this scale indicate that it does not distinguish between Deep, Strategic, and Surface Apathetic learners. Thus, although it may not have been theoretically justified to run a confirmatory factor model in which Alertness to Assessment Demands was freed to load on the Deep Approach, the behavior of this subscale warrants further exploration. Had the proportion of students demonstrating a dominant Deep Approach been larger in this study then perhaps the factor analysis would have revealed significant correlations among error terms for Strategic Approach—Alertness to Assessment Demands and one or more of the Deep Approach subscales.

Discussion of Interview Results

What are Baccalaureate Nursing Students' Conceptions of the Course for Which They Completed the ASSIST?

This research question was addressed by asking students who participated in the interview component of the study to describe the course for which they completed the ASSIST. There were three distinct conceptions apparent in students' responses: (a) Content Delivery, (b) Demands on Student, and (c) Topic of Study. The conceptions that emerged from the data generated by this research question were useful for establishing the learning context students experienced in the courses for which they completed the ASSIST.

What are Baccalaureate Nursing Students' Conceptions of What Their Instructor Does During Class?

Students conceived of what their instructor did during class as (a) providing a note-taking handout, (b) facilitating content application, and (c) presenting information that students needed to know for exams. The first conception was described only by Patho and NCAC students because students in API did not receive note-taking handouts. The mechanisms by which professors facilitated the application of content included telling stories about personal experiences and providing students with worksheets and case studies to work on in groups during class. These conceptions were useful for establishing the learning context students experienced in the courses for which they completed the ASSIST.

<u>What are Baccalaureate Nursing Students' Conceptions of What they Do During Class?</u>

Consistent with the conceptions gleaned from the previous two research questions, this research question also produced conceptions that were useful in establishing the learning context. When asked, "What did you do during class?" all students reported taking notes. This is a typical (Van Meter, Yokoi, & Pressley, 1994, 323) and positive finding since taking notes during lecture is associated with higher academic achievement than not taking notes (Kiewra, 1985; Kiewra, 1987; Kiewra, 2002). Even if students do not review their notes after class, taking notes is believed to be better than not taking notes because it "increases attention during the lecture and facilitates encoding of lecture ideas into long term memory" (Kiewra, 1987, p. 234). While all students reported taking notes during class, their conceptions of note taking were divided nearly equally between two approaches to note taking which may help to explain differences in their academic achievement. Those conceptions were (a) Writing Everything Down and (b) Writing Main Ideas.

A need to capture all of the information in lecture by Writing Everything Down was expressed by just under half of the students (46%), nearly all of whom were low or medium achievers in Patho or API. The desire to write down the entire lecture is not necessarily a bad idea because "higher quantities of notes are associated with higher achievement (and vice versa)" (Kiewra, 2002, p. 72; Kiewra & Benton, 1988; Kiewra, Benton, & Lewis, 1987; Titsworth & Kiewra, 2001). Furthermore, when students are not familiar with the concepts presented in a lecture or when they do not trust their ability to

select main ideas or to paraphrase in abbreviated form, they are likely to attempt verbatim transcription of the lecture (Van Meter et al., 1994).

Students may try to write everything down if they perceive that the lecture is being delivered so fast that they are unable to figure out what to write down, so they try to capture it all in hopes of sorting it out later in review (Van Meter et al., 1994). It was apparent that the Writing Everything Down conception was accompanied by a sense of urgency resulting in efforts to write quickly, which may have impaired the quality of the notes students were able to record if they tried to transcribe the lecture verbatim. The low proportion of high achieving students who expressed this conception suggests that perhaps students who took the Writing Everything Down approach did not adequately represent critical ideas in their notes (Kiewra, 1987; Peverly et al., 2007). Only one high achieving student demonstrated the Writing Everything Down conception, but she was unique in that she used a system of shorthand which might have allowed her to overcome the inefficiency of trying to write everything down verbatim, ultimately resulting in more complete and coherent notes.

Taking notes that are of high quality requires skill. The quantity and quality of lecture notes is influenced by the extent to which students are able to translate the lecturer's words quickly and accurately, the effectiveness of students' working memory, and their ability to identify the main ideas of the lecture (Peverly et al., 2007). Students must hear and remember what the lecturer said long enough to transcribe it into their notes; meanwhile, as they are trying to remember the previous idea long enough to record it, the lecturer has moved on to another idea (Peverly et al.). Thus, it is not difficult to

understand how lecture notes could end up being rather incomplete and of poor quality (Titsworth & Kiewra; 2004; Kiewra, 1985; Locke, 1977).

A preponderance of medium and low achieving students strove to Write Everything Down and all were enrolled in API (N = 4) or Patho (N = 2). In contrast, all high achieving students except one high achiever in API took the Writing Main Ideas conception, and all but one of those students was enrolled in NCAC (N = 3) or Patho (N = 3). The only API student who demonstrated the Writing Main Ideas approach was a high achiever, while the only high achieving student who did not demonstrate the Writing Main Ideas conception was also in API, but used a system of shorthand.

None of the low achieving students took the Writing Main Ideas approach; all expressed the Writing Everything Down conception, describing it as requiring "quick" writing. Students in API did not receive any type of note taking handout while students in Patho and NCAC did. API students reported taking notes rapidly on their own paper. When students use some type of structured note-taking handout, such as an outline, the number of main ideas and amount of notes they record is likely to be higher than if they started out with blank sheets of paper (Austin, Lee, & Carr, 2004; Kiewra, 2002; Kiewra, Benton, Kim, Risch, & Christensen, 1995).

Austin et al. (2004) assert, "when students are left to their own devices they do not do a very good job of recording the content of a lecture" (p. 318). It is possible that the API students experienced cognitive overload (Piolat, Olive, & Kellogg, 2005) which may have prevented them from transcribing the information in sufficient and accurate detail to make it useful for studying later. Then again, API students reported that the

professor wrote or illustrated the entire lecture on the chalk board as she delivered it, which they could copy down verbatim into their notes. Thus, it does not appear that the API students were left to their own devices, but instead were actually put in an optimal position to transcribe complete notes exactly as the professor presented them. Furthermore, Patho students who reported the Writing Everything Down conception *did* receive a note-taking handout, which corresponded to slides that the professor projected on a large screen. Students reported taking notes on the handout as the professor elaborated on the bulleted points listed on the slides. Thus, Patho students were not left to their own devices either, but were actually fortunate to have access to a teaching method that has been shown to increase the completeness of lecture notes (Austin et al., 2004).

The best explanation for the patterns in note-taking conceptions revealed in this dissertation work relates to the cognitive maturation of the students that results from the accumulation of college-knowledge and experience. The low proportion of students demonstrating the Writing Main Ideas conception in API is offset by the relatively high proportion of students adopting the same approach in NCAC, suggesting a trend toward its adoption as students progressed in their program of study. Perhaps students became better or more fluent in recording lecture notes with time and practice. Whether or not students in NCAC had become more skillful note-takers as they had progressed through API, APII, Patho, and other courses they completed before NCAC was not investigated in this study, but previous research involving "36 different undergraduate majors" (Van Meter et al., 1994, p. 324) suggests that students evolve as note takers as they accumulate years of college experience. Specifically, these students "reported taking more

responsibility for their note taking as they progressed through school, learning to take down complete thoughts in an organized fashion, increasing their selectivity, and improving the accuracy of their notes" (Van Meter et al., p. 329).

Students in API and APII learn basic information about the anatomy and physiology of the body which provides a foundation for what they learn about human disease in Patho. Both AP courses and Patho are intended to provide pre-requisite knowledge for the content on patient care that they encounter in NCAC. At least one student in this dissertation work acknowledged the relevance of what she had learned in previous course work to the courses she was taking during the semester following her completion of Patho.

Discussion of Learning Context

The first three questions presented to students who participated in the interview component of the study were intended to elicit information that would answer research questions 11-13 and allow the construction of the learning context to which students were exposed in the courses for which they completed the ASSIST. Specifically, students were asked to (a) describe the course for which they completed to ASSIST, (b) describe what the instructor did during class, and (c) describe what they did during class.

The information generated from these three questions indicated that students experienced traditional lecture-style teaching supplemented by visual images created by drawing or writing on a chalk board, or projecting overheads or slides on a screen (Johnson & Mighten, 2005). Students were primarily passive recipients of information delivered by the professor, but were active to the extent that they took notes, either on

their own note paper or on note-taking handouts supplied by the professor. Students were also permitted and encouraged to ask the professor questions or to answer occasional questions posed by the professor. There were some subtle variations in teaching approaches from course to course, but in general the learning context experienced by students in this study is consistent with the prevailing tradition of lecture in higher education (Bligh, 2000; Johnson & Mighten, 2005; Wirt et al, 2001).

<u>What are Baccalaureate Nursing Students' Conceptions of What They Do After Class to Learn Course Content?</u>

The four major conceptions that emerged as a result of asking students to describe what they did after class to learn the material for the class were (a) I Should Have Done *Something* After Class, (b) I did Something Right Away After Class, (c) I Referred to and/or Read the Course Textbook After Class, and (d) I Reviewed and/or Revised My Notes After Class. With the exception of I Should Have Done *Something* After Class, the latter three conceptions were also considered study tactics and will be elaborated on in the "Discussion of Study Tactics" section of this chapter.

Two students demonstrated regret for not having done *something* after class. Both had failed the course for which they completed the ASSIST. In contrast, the third student who failed described doing after class many of the things that the other two failing students wished they had done. Moreover, the third failing student reported doing many of the things highly successful students reported doing after class. The small number of failing students in this sample and the contrast between the two regretful low achieving students and the third highly strategic but low achieving student prevents one from concluding that there is a relationship between this conception and level of academic

achievement, although it seems logical that successful students would be less inclined to express regret about what they should have done after class to learn course content. The absence of this conception in NCAC students is most likely due their status as either medium or high achieving. It is interesting that no frustration was expressed by the API student who failed despite actually doing things outside of class that the other two failing students wished they had done. During data analysis it was discovered that this strategic but failing student was the same student who demonstrated dual dominance in Strategic and Deep Approach Scale scores on the ASSIST. It may be that this student experienced dissonance in her intentions and abilities, as discussed in the previous section of this chapter called "Dissonant Study Approaches." It may also be that the student was providing socially acceptable responses; more specifically, the student may have been selecting answers that s/he believed to represent the *right* or *correct* way to approach studying, but were not necessarily answers that reflected how she actually approached studying.

What are Baccalaureate Nursing Students' Conceptions of What They do after Class to Prepare for Exams?

The five conceptions that resulted from asking students what they did to prepare for exams were (a) Studying is Reviewing Notes, (b) Cramming is Undesirable, but Sometimes Unavoidable, (c) Studying Allows me to Visualize My Notes During the Test, (d) Studying Involves Self-testing, and (e) Studying Requires Taking a Break Right Before the Exam. Two of these conceptions, (a) Studying is Reviewing Notes and (d) Studying Involves Self-testing, were also considered study tactics and will be elaborated on in the "Discussion of Study Tactics" section of this chapter.

API students demonstrated the greatest variety in conceptions about preparing for exams. Perhaps their status as novice college students coupled with the fact that API and APII have relatively high failure rates made them more aware of assessment demands to which they responded in multiple ways because they had not yet identified the most effective ways to negotiate those demands.

Cramming. The conception that Cramming is Undesirable, but Sometimes Unavoidable was demonstrated by only API students and didn't seem to be related to academic achievement. The absence of this conception in Patho and NCAC and the diminished variety of conceptions demonstrated by students in these courses compared to API students suggests that students become more competent and confident about studying as they gain college experience and hence do not find themselves in the position of needing to cram for exams.

Visualizing Notes During Test. One high achieving student in each course demonstrated the conception of Studying Allows me to Visualize my Notes During the Test. The mechanism by which studying results in these students' ability to generate a mental image of their notes when they take an exam was not explored in this study, but certainly seems worth pursuing in future studies. Barring the slight possibility that these three students have photographic memories, it seems that in order to picture their notes mentally while taking an exam, they would need to have become very familiar with their notes, which would require processing them in certain ways when studying. The three students demonstrating this conception all reported reviewing their notes more than once prior to an exam; two of them re-wrote or typed their notes, one verbatim and the other in

condensed form. The third student reported pausing intermittently as she reviewed her notes and attempting to visualize them, in effect testing her familiarity with them.

Taking a Break. The least prevalent conception of what students did to prepare for exams was Studying Requires Taking a Break Before the Exam. Two high achieving students demonstrated the conception, but there was no apparent relationship to learning context. It would be interesting to investigate further this conception to find out how students arrive at a point in their studying at which they feel they have the content down and can afford to take a break from studying.

Discussion of Study Tactics

What Study Tactics Do Baccalaureate Nursing Students Use to Learn Course Content and Prepare for Exams?

The 13 students in the interview sample reported using a relatively small number of study tactics (M = 3.46) considering the large pool of 20-30 or more study tactics available to them. Examples of study tactics were included with the conceptual definition of study tactics in Chapter 1. The concept of study tactics was also elaborated in Chapter 2 (See "Study Tactics").

The most frequently reported study tactic was notes-review, which was also the most frequent behavior students reported doing with their notes in a study conducted by Van Meter et al. (1994). Reviewing notes was a universal conception among all students, regardless of learning context or academic achievement. It appears that if students do nothing else to prepare for exams, they will at least review their notes one or more times. Van Meter et al. (1994) reported similar findings, noting that when asked what they did with their notes undergraduate college students most often answered "review them" (p.

330). Because all students reviewed their notes at least once, reviewing notes more than once was the study tactic compared between high, medium, and low achievers and between students in API, Patho, and NCAC. This research suggests that the more students do with their notes, the more likely they are to be academically successful and that reviewing notes only a single time before an exam as a sole study tactic is associated with academic failure.

This research revealed that, in addition to reviewing their notes more than once, five students (38%) revised them by re-writing or typing them verbatim or in condensed form. The proportion of students who revised their notes in this study is somewhat higher than the proportion reported by Van Meter et al. (29%). The finding that 15% of students re-wrote or typed their notes verbatim in this study is slightly higher than the proportion of 12% reported by Van Meter et al. Reviewing their notes was the only thing 47% of students in the study by Van Meter et al. did with their notes, whereas it was reported by a considerably larger proportion of students in this dissertation study (62%). Notes were reviewed and/or revised right away after class by a moderate proportion of students (46%).

Although reading their textbooks was not something students reported doing right away, a moderate number of students (N = 5, 38%) reported referring to their textbooks to verify or clarify information in their notes. Similarly, students in the study by Van Meter et al. reported using their notes to clarify unclear content in their notes. A moderate number of students (N = 4, 31%) in this dissertation work read the textbook regularly as a

means of receiving course content, while a few (N = 2) read the textbook regularly in addition to using it as a reference against which to check their notes.

A moderate proportion of students (31%) collaborated with others in some way outside of class as a means of learning the material for the class. Other collaborators included peers and professors.

Is There a Relationship Between Study Tactics Used by Baccalaureate Nursing Students and Course Subject Area, and if so, What is the Nature of This Relationship?

Although a relationship between the sheer number of study tactics used and the course for which students completed the ASSIST (learning context) was not supported by statistical analysis, the proportions of students using some study tactics did appear to be greater in some courses than others. Whether or not these differences in proportions were statistically significant was not tested with statistical analysis because of the small numbers of students in each course. The study tactics and course information for each student who participated in the interview component of this dissertation work are summarized in Table A16 (Appendix A).

API and Patho students used all of the study tactics to some extent. NCAC students did not (a) do something right away or (b) collaborate with others. Only API and Patho students reported collaborating with others either by working with peers or meeting individually with their professor to clarify information in their notes. Van Meter et al. (1994) reported that students are more likely to work with others (e.g. tutors, teaching assistants, or professors) in courses that are considered difficult or "when it is difficult to take notes in a course" (Van Meter et al., p. 331). For Allen College students, API and Patho are traditionally challenging courses with higher failure rates than courses they take

when they are further along in their program of study. Therefore finding that only students in API and Patho reported working with others as a study tactic compares similarly to Van Meter et al. In addition, as previously noted, students were not provided with a note-taking handout in API, which may also explain why they were more inclined to revise their notes than Patho and NCAC students. API students had to write down a large amount of information quickly, which may have resulted in notes that were not entirely legible or complete. In contrast, students in Patho and NCAC had to fill in partially-completed lecture handouts, which were less likely to end up incomplete and/or illegible.

API students had a strong sense that it was important to do *something* right away after class. What they did right away consisted of reviewing their notes, revising their notes or doing their homework. A moderate proportion of Patho students reported that they reviewed their notes right away after class. The sense of urgency to do something soon after class was not demonstrated by NCAC students, suggesting that doing something right away is a characteristic of less experienced learners. All of the students who actually did something right away after class were academically successful except for one, who failed API despite reporting many of the same study tactics as successful students.

NCAC students demonstrated the highest prevalence of textbook use, but this finding must be attributed to the fact that these students expected to take quizzes over assigned reading. It is uncertain whether NCAC students would have used their course textbooks if they had not been motivated to do so by the prospect of a quiz. API students

indicated that what they needed to know for exams was provided in lecture, so there was little motivation for them to read their textbook, although some did.

The results of this study provide more evidence to suggest that students will use different study tactics depending on the demands of a specific course or learning context, thus contributing to the substantial amount of literature already supporting this notion (August-Brady, 2005; Colgan, 1992; Entwistle & McCune, 2004; Hadwin et al., 2001; Meyer & Dunne, 1991; Van Meter et al., 1994).

<u>Is There a Relationship Between Study Tactics Used by Baccalaureate Nursing Students and Student Achievement, and if so, What is the Nature of This Relationship?</u>

Descriptive statistics suggested that the number of study tactics a student used was related to a student's level of academic achievement. The mean number of study tactics was highest for high achievers and lowest for low achievers. However, the correlation between course grade percentage and number of study tactics was not statistically significant nor was the mean variance in number of study tactics used by high, medium, and low achievers. Of course type II error is a strong possibility since the interview sample size and the groups that were compared within it were quite small. The study tactics and level of academic achievement for each student who participated in the interview component of this dissertation work are summarized in Table A16 (Appendix A).

Reviewing notes was a universal conception among all students, regardless of learning context or academic achievement. It appears that if students do nothing else to prepare for exams, they will at least review their notes one or more times. Van Meter et al. (1994) reported similar findings, noting that when asked what they did with their notes

undergraduate college students most often answered "review them" (p. 330). The extent to which students reviewed their notes and the combination of notes-review with other tactics in this dissertation work suggested some relationships to academic achievement. Two of the three low achieving students who participated in the interview component of the study only reviewed their notes a single time just prior to exams, thus it appears that more successful students review their notes more than once prior to an exam. This conclusion is weakened by the fact that the third lowest achieving student reported reviewing her notes more than once in addition to using several other study tactics. As previously noted, this student happened to be the same student who scored highest equally on the Deep and Strategic Approach scales of the ASSIST. In addition to the possibility that this student demonstrated a disintegrated approach to studying (See Dissonant Study Approaches) one must consider the alternative possibility that s/he was providing socially acceptable responses both on the survey and during the interview. In any case, the comparison of low, medium, and high achievers is hindered by the low number of low achieving students (N = 3) and the fact that only one of them reported using additional study tactics beyond notes review.

It is clear that more high than low achieving students used each of the identified study tactics. It is also clear that a greater number of high achieving students used a greater number of study tactics than medium achieving students. More high achieving students (a) reviewed their notes more than once, (b) did something right away, (c) re-wrote or retyped their notes, and (d) used self testing than did medium achieving students. Equal numbers of high and medium achieving students (a) used the textbook,

(b) collaborated with others, and (c) selected main ideas. The small numbers of students in each level of achievement makes it infeasible to test statistically the differences in proportions among these groups. Thus, based on sheer numbers, and to a certain extent percentages, it appears that the number of study tactics used is positively related to level of achievement. Additional research using a considerably larger sample and more rigorous means of measuring study tactics is needed in order to explore the relationships of study tactics and academic achievement.

<div align="center">Discussion of Instruments</div>

The main purpose of conducting semi-structured interviews with a sample of high, medium, and low achieving students in this study was to identify specific, fine-grain study tactics not captured by the ASSIST. After this dissertation work was well underway, it was discovered that standardized instruments containing items that measured specific study tactics did exist. Examples include the Learning and Study Strategies Inventory (LASSI; Weintstein & Palmer, 2002) and the Motivated Strategies for Learning Questionnaire (MSLQ; Pintrich, Smith, Garcia, & McKeachie, 1991). Although the ASSIST, LASSI, and MSLQ share some similarities, for the most part, the ASSIST clearly does not measure specific, fine-grain study tactics.

Despite its shortcomings as a measure of study tactics, additional factors influenced the choice of the ASSIST as the survey in this study. At the time the work on this dissertation began (Brodersen, 2003), the LASSI was commercially available for approximately $3 per instrument and therefore it was considered cost-prohibitive to use it. Unbeknownst to this researcher, the MLSQ was also available and was in the public

domain, but its existence was not discovered in the numerous literature searches that were conducted until near the very end of the study, after the data analysis phase was complete. The ASSIST was readily available during the pre- and early proposal phases of this work and was immediately provided at no cost by its preeminent developer, Dr. Noel Entwistle. Consequently the ASSIST was used in a pilot study (Brodersen, 2003) and subsequently it was discovered that the ASSIST efficiently and accessibly operationalized the framework described in Chapter 2. This framework described how students learn in terms of neurophysiological processes, CIP, and SAL theories.

The ASSIST was certainly a worthy instrument for evaluating conceptions of learning, approaches to studying, and preferences for different types of courses and teaching methods, but using the LASSI or the MLSQ in this dissertation work in addition to the ASSIST would have been a more comprehensive and efficient way to capture specific study tactics. Semi-structured interviews may not have been a very efficient means of identifying the study tactics used by baccalaureate nursing students for several reasons. First, the interviews were not conducted until well into the semester following the one in which students completed the ASSIST so students may have forgotten the study tactics they used during the course for which they completed the survey. Moreover, students who were repeating the course for which they completed the ASSIST may have had difficulty separating the study strategies they were using in that course at the time of the interview from the strategies they used during the semester in which they failed the course. Furthermore, the interviews lasted approximately 45 minutes and did not focus exclusively on study tactics, so insufficient time may have been allotted to that particular

interview topic. If students in this study had been given a structured self-report instrument featuring a list from which they could identify and select the study tactics they used, they may have identified additional study tactics that they did not recall during the semi-structured interview. Certainly it is also possible that had students been provided with a structured list of study tactics, they might have been prompted to select socially acceptable responses. Of course it is possible that when asked to describe their study tactics during their semi-structured interviews students may also have provided socially acceptable responses. It is not impossible, however, that an accurate, if not more accurate report of study tactics might have been elicited by asking students to think about the course for which they completed the ASSIST and to recall the study tactics they used.

Discussion of Samples

Discussion of Survey Sample

The ASSIST response rate was excellent (91%), but compared to non-participants, students who completed the ASSIST differed significantly in age, cumulative GPA, cumulative ACT score, and course grade percentage. Course success significantly predicted whether or not students completed the ASSIST.

Discussion of Interview Sample

The purposive sample of students that was assembled to provide the information sought in this aspect of the study represented three of the four courses for which the ASSIST was completed (e.g. API, Patho, and NCAC). It was not determined why none of APII students scheduled interviews. All students who had earned an A or A-minus (high achievers) and all students who had earned a failing grade of C-minus or less (low

achievers) were invited to participate in an interview. Interviews were scheduled by 3 of

27 low achievers and 6 of 21 high achievers. Randomly selected to receive invitations to

interview were 52 students who had earned grades ranging from C to B-plus; four of

those students scheduled interviews. Thus the interview sample overrepresented high

achievers and underrepresented low achievers. This situation is not unexpected since it

seems reasonable that high achieving students would be more willing to discuss the

course in which they earned a high grade than would low achieving students be willing to

discuss a course in which they had received a failing grade. The influence of course

success on willingness to participate in this study was supported by statistical analysis, as

reported previously in Chapter 2.

Conclusions

The under-representation of failing students in this study warrants the conclusion

that students who are struggling academically are less likely to participate in research on

studying and learning. Additional conclusions drawn from the quantitative and qualitative

results of this study are necessarily tempered by sampling bias.

Dominant Study Approach and Course

Students in the survey sample were predominantly strategic learners, based on the

finding that a majority of students scored highest on the Strategic Approach scale, second

highest on the Deep Approach scale, and lowest on the Surface Approach scale. This

pattern was consistent from course to course, suggesting consistency in the teaching

methods and course characteristics to which students were exposed.

Study Approach and Course Grades

Study approach was related to academic success. Specifically, Deep and Strategic Approach scores were related positively to final course grade percentages. Surface Apathetic Approach scores were related negatively to final course grade percentages.

Study Approach and Cumulative GPA

Study approach was related to students' cumulative GPAs documented prior to the semester in which the ASSIST was completed. Deep and Strategic Approach scores were related positively to cumulative GPA. Surface Apathetic Approach scores were related negatively to cumulative GPA.

Study Approach Cumulative ACT

Based on statistically insignificant correlations between cumulative ACT score and Deep, Strategic, and Surface Apathetic scores, it was determined that study approach was not related to ACT score.

Study Approach and Age

Two study approaches were related to age. Deep Approach score was related positively to age. Surface Apathetic Approach score was related negatively to age.

Study Approaches and Hours of Paid Employment

Strategic Approach was related negatively to hours spent each week in paid employment. There were no relationships between the Deep and Surface Apathetic approaches and hours spent each week in paid employment.

Study Approach and Hours Spent Studying

Study approach was related to hours spent on studying each week. Deep and Strategic Approach scores were related positively to hours spent on studying each week.

The Surface Apathetic Approach was related negatively to hours spent on studying each week.

Study Approach and Students' Ratings of Performance in Course

Students were aware of their graded performance in the course for which they completed the ASSIST as indicated by the relationship between study approach and students' self-ratings of course performance. Deep and Strategic Approach scores were related positively to performance ratings. Surface Apathetic Approach score was related negatively to performance rating.

Preferred Types of Course Characteristics and Teaching Methods

Students reported stronger preferences for course characteristics and teaching methods that support a Surface Approach than they did characteristics and methods that support a Deep Approach.

Validity and Reliability of the ASSIST

The ASSIST demonstrated moderate to strong internal consistency reliability within the sample of nursing students studied in this dissertation work. With the exception of the Strategic Approach—Alertness to Assessment Demands subscale, the ASSIST demonstrated acceptable construct validity, however, small sample size may have affected the results of confirmatory factor analysis.

Conceptions of Courses

Students' conceptions of the course for which they completed the ASSIST indicated they experienced traditional lecture-style teaching and fact-based assessment common in undergraduate education. Students conceived of the course for which they

completed the ASSIST as a means of receiving information about a specific topic of study, which imposed considerable demands on their time and abilities.

Conceptions of What Instructor Did During Class

Students conceived of their professors as delivering and facilitating the application of content in a specific topic area. Content consisted of information students needed to know to pass exams. Content was delivered by lecture, which in most cases was supplemented by a note-taking handout.

Conceptions of What Students Did During Class

Taking notes was the primary conception of what students did during class. There were two different conceptions of taking notes: (a) writing everything down and (b) writing main ideas. Students who were not provided with a note-taking handout demonstrated a sense of urgency about quickly writing everything that was said during lecture.

Students at higher levels of progression in the program and those who were high achievers were more likely to write down main ideas in their notes rather than writing everything down, but whether or not students were provided with a note-taking handout was related to whether or not they attempted to capture main ideas rather than writing everything down.

Conceptions of What Students Did After Class to Learn Course Content

Students believed that it was necessary to do something after class to learn course content and some students believed it was important to do something right away. Successful students did something after class rather than nothing. Students conceived of

doing something after class as reading or referring to their textbook, or reviewing and/or revising their lecture notes.

Conceptions of What Students Did After Class to Prepare for Exams

Students conceived of preparing for exams as (a) reviewing their notes, (b) avoiding cramming, but cramming if necessary, (c) testing their knowledge of content, (d) studying to the extent that they were able to conjure up a mental picture of their notes during the exam, and (e) taking a break from studying on the day of exam. Students at lower levels of program progression were more likely to cram before an exam, even though they believed cramming to be a poor study strategy. For high achieving students, one outcome of studying for exams was that they were able to visualize their notes during an exam. High achieving students were also more likely to take a break from studying just prior to an exam.

Study Tactics Used to Learn Course Content and Prepare for Exams

Students used a small number of study tactics. More specifically, students' study tactics were limited to 1-5 of the following study tactics: (a) notes-review, (b) reading the textbook or using it as a reference, (c) self-testing, (d) doing something right away, (e) revising notes, (f) collaborating with others, and (g) selecting main ideas. The most common study tactic students used was notes-review. If students used no other study tactics, they at least reviewed their notes. Notes-review was the most common note-related behavior students engaged in after class. Students read their textbook regularly if they expect to be quizzed during class over its content. Students also used the textbook as a reference to clarify or verify their lecture notes.

Relationship Between Study Tactics and Course Subject Area

Students at lower levels in program progression (e.g. API, Patho) used a greater number of study tactics than students at higher levels of progression (NCAC). Students at lower levels in program progression (e.g. API, Patho) were also more likely to collaborate with others than students at higher levels of progression (NCAC). Students in courses where a note-taking handout was not provided (API) were more inclined to revise their notes following class.

Relationship Between Study Tactics and Student Achievement

Low achieving students expressed regret for not doing *something* after class to learn the content. High achieving students were more likely to write down main ideas during lecture or to use a system of shorthand when taking notes. Academically successful students who were at lower levels in their program of study did something related to studying right away after class. High achieving students were more likely to revise their notes than low achieving students, but whether or not students were provided with a note-taking handout influenced whether or not notes-revision occurred. High achieving students also used self-testing.

Implications and Recommendations

The under-representation of failing students in this study indicates that future research on nursing students' approaches to studying and their use of study tactics should incorporate strategies to promote greater participation among students who experience low academic success. It may be that low achieving students need a monetary incentive or some other type of compensation, such as free study tactics tutoring, to secure their

participation. The learning contexts to which students were exposed in this study may have fostered a Strategic Approach to studying. If a shift to a Deep Approach is desired, then a change in the learning context must occur. Perhaps such a shift can be achieved through "curricular designs that emphasize autonomy in student learning, workloads that are not content laden, and assessments that test understanding of concepts, rather than recall of facts" (August-Brady, 2005, p. 298). Additional research is needed to identify and describe the specific characteristics of learning contexts that promote a Deep Approach to learning and deter a Surface Apathetic Approach.

This research showed that both Strategic and Deep Approaches were related positively to academic success, while the Surface Apathetic Approach was related negatively to academic success. These findings imply that study approach assessment may be beneficial in courses with high failure rates. Additional research is needed to explore the optimal timing of study approach assessment. It seems reasonable that assessment should occur at a point during the semester when students have established patterns in their approaches to studying, yet early enough so that they can be provided with feedback and counseling that will enable them to alter their approaches if warranted. Determining the extent to which students use feedback to alter their approaches to studying will require further inquiry. Additional inquiry is also needed to identify relationships between each approach to studying and long-term knowledge retention.

The negative association between the Surface Apathetic Approach and GPA implies that GPA could be used as an indicator of students who might be prone to taking a Surface Apathetic Approach to studying, and hence at risk for academic struggle. GPA

could be used as a marker for students whose study approaches should be assessed in courses with high failure rates. Assessing students who are at risk for taking a Surface Apathetic Approach would permit early identification and intervention for those who are identified as predominantly Surface Apathetic learners. The specific risk-range for GPA is uncertain as is the optimal timing of study approach assessment for at-risk students. Additional research would help to reduce these uncertainties.

Relationships between ACT scores and approaches to studying were not revealed in this research; however, sample size may have been a confounding factor since ACT scores were not available for all students. Consequently, relationships between ACT scores and approaches to studying should be explored in future research using larger samples with more complete sets of ACT scores.

The positive relationship between age and Deep Approach scores suggests that the increasing age of nursing students could result in increased numbers of students in nursing programs who take a Deep Approach to studying. It is possible that younger students who take a Surface Apathetic Approach to studying could benefit from exposure to the older students' ways of thinking and approaches to studying. Further research would be needed to substantiate this notion, but additional research to explore in greater depth the nature of the association between age and the Deep Approach is a higher priority.

The negative association of Strategic Approach scores with hours of paid employment and the corresponding positive association of those scores with indicators of academic success (e.g. GPA, course grade percentages) has implications for counseling

less strategically-inclined students about the potential negative academic impact of working too many hours. Further research is needed to in order to describe more fully the relationship between employment hours and approaches to studying. Perhaps the optimum number of hours spent in paid employment could be determined so students could be given some idea of how many hours they should expect to work and still be able to take a Strategic, or ideally a Deep Approach to studying.

The finding that hours spent studying each week was positively related to Deep and Strategic Approach scores, and negatively related to Surface Apathetic scores supports the recommendation for routine assessment of approaches to studying in courses that have high failure rates. It seems reasonable that students might benefit from counseling about such relationships and their corresponding association with academic success. Additional research is needed to determine whether students are aware of the recommended number of study hours for their courses, the extent to which they abide by those recommendations, and whether or not counseling about the recommended number of study hours effectively increases time spent studying.

Students' self-ratings of their course performance suggest that they were not naïve about their status in the course. Whether or not students sought assistance or changed their approaches to studying if they were performing unsatisfactorily is not known. Further research would help to illuminate how students deal with unsatisfactory academic performance.

Students demonstrated somewhat conflicting preferences for course characteristics and teaching methods that support both Deep and Surface Approaches to

studying. Additional research is needed to determine whether this conflict could be resolved by a shift to learning contexts that are geared specifically toward fostering a Deep Approach to studying.

This research provided evidence that the ASSIST is a reasonably valid and reliable measure of approaches to studying and could certainly be used in future research or routine classroom assessment of approaches to studying. Educators and researchers may want to omit the Strategic Approach—Alertness to Assessment Demands subscale, which did not demonstrate acceptable construct validity. Future research on approaches to studying in larger samples of nursing students is needed to verify or disconfirm the lack of construct validity demonstrated in this study by the aforementioned subscale. The ASSIST is not a measure of study tactics; therefore, it is recommended that future research and routine classroom assessment of study tactics employ standardized instruments such as the LASSI or the MSLQ, which include items that capture a wide range of study tactics.

Students' conceptions of their courses and instructors were consistent with traditional lecture-style teaching and fact-based assessment. Changing such conceptions, if necessary will require changing the means by which students are exposed to what it is they are supposed to learn in a course and changing how students interact with that content during class-time. Determining the impact that such changes might have on studying and long-term retention of knowledge would require further research.

In this study, what students did during class was directly related to teaching methods. Thus in order to change what students do during class, what teachers do must

also change. Meanwhile, students are likely to encounter lecture and should receive instructions on how to take notes as completely and efficiently as possible without trying to record verbatim what the instructor says. Research is needed to determine the impact of note-taking instruction on the quality of the notes students record. It seems reasonable that instructors should provide students with a note-taking handout and should follow that handout closely as they lecture, but additional research is needed in order to explore the benefits and disadvantages of note-taking handouts, their relationship to effective note-taking, and academic success.

The finding that academically successful students did something related to learning content right away after class (e.g. read or reviewed course textbook, reviewed and/or revised lecture notes) has implications for study tactics training. Specifically, students in courses with high failure rates should be informed that employing study tactics right away after class may enhance their academic achievement in the course.

The results of this study support the common-sense notion that cramming is not an effective study tactic. The results also suggest that students are aware that cramming is undesirable, but additional research is needed to explore factors that are associated with cramming. The finding that some high achieving students were able to visualize their notes during an exam warrants further study in order to explore the relationship of visualization, memorization, and learning. The finding that some high achieving students took a break from studying before an exam also requires further study in order to describe the function of a break and the conditions that permit it.

The narrow range of study tactics students reported using in this research has implications for study tactics training and further research. Students may have a limited repertoire of study tactics and may benefit from study tactics training. It is also possible that students are aware of study tactics they could use, but for some reason do not choose to use them. Further research is needed to describe students' awareness or knowledge of study tactics and their actual use of those tactics.

The results of this study provide further support for the notion that the choice of study tactics is influenced by the learning context, but the nature of this relationship is unclear. Future research is needed to describe quantitatively the study tactics used in specific courses by large samples of nursing students. Additional research is needed to determine whether the number of study tactics used is a function of course characteristics or academic experience.

This research provides evidence to indicate that study tactics training may be beneficial for students who are at risk for academic failure. Study tactics training should incorporate instruction on effective note-taking during lecture and counseling about the importance of doing something right away after class, such as reviewing and revising lecture notes. It may be worthwhile to teach students to refer to the course textbook either as a means of repeating, rehearsing or reinforcing lecture content. Students should be taught various ways to use self-testing, including use of note cards or flash cards, practice exams, and pausing while studying to mentally visualize or review what they were studying. Ways in which students can collaborate with others to increase the completeness or accuracy of their notes, or to test their knowledge of content should be

presented. Organization and time management should be incorporated into study skills

training so that students can avoid cramming, if indeed cramming is a function of time

management. Theoretically study tactics training should increase students' repertoire of

study tactics and subsequent use of those tactics, which would allow them to identify the

study tactics that are most effective in specific learning contexts. Supporting this theory

will require additional research.

<div align="center">Recommendations for Nursing Education</div>

The results of this research warrant recommendations for the (a) routine

assessment of baccalaureate nursing students' approaches to studying and study, (b) use

of academic variables as indicators of approaches to studying, (c) counseling about study

approaches and training in the use of study tactics, and (d) changing academic contexts to

promote Deep Approaches to studying. Within these general recommendations for

nursing education are specific recommendations.

Routine Assessment Approaches to Studying and Study Tactics

The findings in this study suggest that the assessment of approaches to studying

and study tactics should be incorporated into courses with high failure rates (e.g. API,

APII, & Patho). Since the approaches to studying and study tactics that a student will use

are to some extent driven by the teaching methods and characteristics of specific courses,

assessment of tactics and approaches should occur within the context of individual

courses. Assessment could take place shortly after the first major exam in a course. In

order for assessment to be useful, the results would need to be tabulated and presented to

students relatively soon following the assessment. Assessment results may be reassuring

for some students and instructive for others. Such assessment may stimulate students' thinking about how they approach studying and the study tactics they use, and may motivate them to alter their approach and to try additional or different study tactics. Additionally, it appears that a concurrent assessment of teaching methods and graded assessment methods might be warranted when assessing students in a course with a high failure rate.

The ASSIST could be used with confidence to assess approaches to studying in nursing students, but users should consider omitting the subscale Strategic Approach— Alertness to Assessment Demands. In addition to using the ASSIST to measure approaches studying, it is recommended that assessment continue incorporate students' ratings of their course performance and their perceptions of courses and teaching methods. Either the LASSI or the MSLQ could be used to assess study tactics since both instruments quantify a wide range of study tactics.

Use of Academic Variables as Indicators of Approaches to Studying

If it is not practical or feasible to assess the approaches to studying of all students in courses with high failure rates, cumulative GPA could be used to identify students who are at risk for taking a Surface Approach to studying and assessment could be limited to only those high risk students. Subsequently, students who are identified as predominantly Surface Apathetic Approach learners could be provided with feedback and counseling about their approach to studying and its relationship to academic success.

There is no indication that ACT scores should be used as a marker for students who may adopt a particular approach to studying, but nursing educators should continue

to explore the relationship of ACT scores to approaches to studying and academic success. It is also recommended that educators consider the possible benefits to younger learners that may result from their interaction with older, Deep Approach learners.

<u>Counseling about Approaches to Studying and Training in the Use of Study Tactics</u>

Counseling about approaches to studying should be provided for students who are at risk for academic failure. For example, students who have low Strategic Approach scores should be counseled about the potential negative academic impact of working too many hours. Students who are predominantly Surface Apathetic learners should be counseled about the relationship of study hours to approaches to studying and academic success.

Study tactics training should be provided for students who are at risk for academic failure. Such training should incorporate instruction on how to take complete notes efficiently during lecture. The importance of doing something right away after class, such as reviewing and revising lecture notes, should be emphasized. Students should be advised to refer to the course textbook either as a means of repeating, rehearsing or reinforcing lecture content. Study tactics training should cover various ways to use self-testing, including use of note cards or flash cards, practice exams, and pausing while studying to mentally visualize or review what they were studying. Ways in which students can collaborate with others to increase the completeness or accuracy of their notes and to test their knowledge of content should be presented. Organization and time management should also be incorporated into study skills training so that students can avoid cramming. Theoretically study tactics training should increase students' repertoire

of study tactics and subsequent use of those tactics, which would allow them to identify the study tactics that are most effective in specific learning contexts.

Changing the Learning Context to Promote a Deep Approach to Studying

Ideally, educators should alter the learning contexts to which students are exposed to promote Deep Approaches to studying. If the learning context features lecture-style teaching methods, then students should be provided with a handout on which to record notes during lecture and lecturers should follow that handout systematically.

Recommendations for Nursing Education Research

In the future, research on approaches to studying and study tactics should incorporate strategies to promote greater participation among students who experience low academic achievement. It may be that low achieving students need a monetary incentive or other compensation, such as free study tactics training, to secure their participation. The results of this study suggest many possibilities for additional research on learning and studying in nursing students. It is recommended, however that the following 10 research questions serve as priorities for further inquiry on approaches to studying, study tactics, and learning in nursing students:

1. What study tactics, as determined by standardized measures of study tactics (e.g. MSLQ), do students use in specific courses?

2. Which study tactics are most strongly associated with academic success?

3. What is the optimal time during a course for the assessment of study approaches and study tactics?

4. To what extent will students alter their approaches to studying as a result of feedback about their approaches to studying scores?

5. To what extent will students alter their study tactics as a result of feedback based on their study tactics assessment results?

6. Are students aware of the recommended study hours for specific courses and to what extend do they abide by those recommendations?

7. To what extent will study tactics training increase students' repertoire of study tactics and subsequent use of those tactics?

8. What are the specific characteristics of learning contexts that promote a Deep Approach to studying?

9. What affect does a learning context that is designed to promote a Deep Approach to studying have on students' Preferences for Course Characteristics and Teaching Methods as measured by the ASSIST?

10. Is the construct validity of the ASSIST subscale, Strategic Approach— Alertness to Assessment Demands, improved by using a larger sample of students?

<u>Contribution to the Science of Nursing Education</u>

Prior to this dissertation work, very little was known about approaches to studying in the U.S. nursing student population. Furthermore, there was no research describing the specific study tactics nursing students use to learn course content. This study contributes to the science of nursing education by demonstrating relationships between approaches to studying and several academic variables, including academic success. It also contributes preliminary knowledge about the study tactics nursing students choose and the learning

contexts that drive their choices. This research extends the limited knowledge about approaches to studying in U.S nursing students and provides a foundation for future inquiry into the correlational and causal relationships between study tactics, learning, and academic achievement.

REFERENCES

Allen College (2004). *Allen College dashboard stats 2004-2005 Academic Year.*
　　　Waterloo, IA: Author.

Allen College (2006). *Allen College student catalog 2006-2008.* Retrieved February 28,
　　　2007 from Allen College Web site: http://www.allencollege.edu

American Association of Colleges of Nursing (2006). *Advancing higher education in
　　　nursing: 2006 annual report, annual state of the schools.* Retrieved April 9, 2007
　　　from AACN Web site: http://www.aacn.nche.edu

American Association of Colleges of Nursing (2007a). *Nursing shortage fact sheet.*
　　　Retrieved April 9, 2007 from AACN Web site: http://www.aacn.nche.edu

American Association of Colleges of Nursing (2007b). *Nursing faculty shortage fact
　　　sheet.* Retrieved April 9, 2007 from AACN Web site: http://www.aacn.nche.edu

American College Test (2003). *National collegiate drop-out and graduation rates--2003.*
　　　Retrieved September 4, 2007, from The American College Test Web site:
　　　http://www.act.org

American College Test (2005). *National collegiate retention and persistence to degree
　　　rates.* Retrieved September 4, 2007, from The American College Test Web site:
　　　http://www.act.org

American College Test (2007). *ACT college profile report, the graduating class of 2007.*
　　　Retrieved September 4, 2007, from The American College Test Web site:
　　　http://www.act.org

American Nurses Association (2006). *Nursing facts: Nursing shortage.* Retrieved April
　　　9, 2007 from ANA NursingWorld Web site:
　　　http://nursingworld.org/readroom/fsshortage.htm

Anderson, C. (1996). Teaching is not feeding. *Nursing Outlook, 44,* 257-258.

Aroian, K., & Norris, A. (2005). Confirmatory factor analysis. In B. Munro, (Ed.),
　　　Statistical methods for health care research (5th ed., pp. 351-376). Philadelphia:
　　　Lippincott Williams & Wilkins.

August-Brady, M.M. (2005). The effect of a metacognitive intervention on approach to
　　　and self-regulation of learning in baccalaureate nursing students. *Journal of
　　　Nursing Education, 44* (7), 297-304.

Austin, J., Lee, M., & Carr, J. (2004). The effects of guided notes on undergraduate students' recording of lecture content. *Journal of Instructional Psychology, 31* (4), 314-320.

Ausubel, D. (1968). *Educational psychology: A cognitive view.* New York: Holt, Rinehart and Winston.

Ausubel, D. (2000). *The acquisition and retention of knowledge: A cognitive view.* Boston: Kluwer Academic Publishers.

Ausubel, D., Novak, J., & Hanesian, H. (1978). *Educational psychology: A cognitive view* (2nd ed.). New York: Holt, Rinehart, & Winston.

Beck, C. (2000). The experience of choosing nursing as a career. *Journal of Nursing Education, 39* (7), 320-322.

Beers, G., & Bowden, S. (2005). The effect of teaching method on long-term knowledge retention. *Journal of Nursing Education, 44* (11), 511-514.

Benda, E. (1991). The relationship among variables in Tinto's conceptual model and Attrition in bachelor's degree nursing students. *Journal of Professional Nursing, 7* (1), 16-24.

Biggs, J.B. (1976). Dimensions of study behavior: Another look at ATI. *British Journal of Educational Psychology, 46,* 68-80.

Biggs, J. H. (1987). *Study Process Questionnaire Manual. Student Approaches to Learning and Studying.* Camberwell, Victoria, Australia: Australian Council for Educational Research.

Biggs, J., Kember, D., & Leung, D. (2001). The revised two-factor Study Process Questionnaire: R-SPQ-2F. *British Journal of Educational Psychology, 71,* 133-149.

Black, B., & Chitty, K. (2007). Critical thinking, the nursing process, and clinical judgment. In K. Chitty & B. Black (Eds.), *Professional nursing: Concepts & challenges* (5th ed., pp. 188-210). St. Louis, Missouri: Saunders Elsevier.

Bligh, D. (2000).*What's the use of lectures?* San Francisco: Jossey-Bass A Wiley Company.

Bosher, S. (2003). Barriers to creating a more culturally diverse nursing profession: Linguistic bias in multiple-choice nursing exams. *Nursing Education Perspectives, 24*(1), 25-34.

Breland, H., Maxey, J., Gernand, R., Cumming, T., & Trapani, C. (March, 2002). *Trends in college admission 2000: A report of a survey of undergraduate admissions policies, practices, and procedures*. Retrieved January, 30, 2005, from http://airweb.org/images/trendsreport.pdf

Broadbent, D. E. (1966). The well ordered mind. *American Educational Research Journal, 3* (4), 281-295.

Brodersen, L. D. (2003). *Baccalaureate nursing students use of specific study strategies*. Unpublished manuscript, University of Northern Iowa, Cedar Falls, Iowa.

Brown, W., & Holtzman, W. (1964). *SSHA manual: Survey of study habits and attitudes*. New York: The Psychological Corporation.

Burnard. P., & Morrison, P. (1992). Students' and lecturers' preferred teaching strategies. *International Journal of Nursing Studies, 29*(4):345-353.

Byrd, G., Garza, C., & Nieswiadomy, R. (1999). Predictors of successful completion of a baccalaureate nursing program. *Nurse Educator, 24* (6), 33-37.

Campbell, A., & Dickson, C. (1996). Predicting student success: A 10-year review using integrative review and meta-analysis. *Journal of Professional Nursing, 12* (1), 47-59.

Candela, L., Dalley, K., & Benzel-Lindley, J. (2006). A case for learning-centered curricula. *Journal of Nursing Education, 45* (2), 59-66.

Cantwell, R. H. (1997). Cognitive dispositions and student nurses' appraisals of their learning environment. *Issues in Educational Research, 7* (1), 19-36.

Cantwell, R.H., & Moore, P.J. (1998). Relationships among control beliefs, approaches to learning, and the academic performance of final-year nurses. *The Alberta Journal of Educational Research, XLIV* (1), 98-102.

Caon, M., & Treagust, D. (1993). Why do some nursing students find their science courses difficult? *Journal of Nursing Education, 32* (6), 255-259.

Centre for Research on Learning and Instruction. (1997). *Scoring key for the Approaches and Study Skills Inventory for Students (ASSIST)*. [Manual]. University of Edinburgh. Author.

Chacko, S., & Huba, M. (1991). Academic achievement among undergraduate nursing students: the development and testing of a causal model. *Journal of Nursing Education, 30* (6), 273.267-

Chan, S., & Wong, F. (1999). Development of basic nursing education in China and Hong Kong. *Journal of Advanced Nursing, 29* (6), 1300-1307.

Chapple, M., Allcock, N., & Wharrad, H. (1993). Bachelor of nursing students' experiences of learning biological sciences alongside medical students. *Nurse Education Today, 15*, 426-434.

Chenevey, B. (1988). Constructing multiple-choice examinations: Item writing. *Journal of Continuing Education in Nursing, 19*(5), 201-204.

Clayton, L.H. (2006). Concept mapping: An effective, active teaching-learning method. *Nursing Education Perspectives, 27* (4), 197-203,

Colgan, A. (1992). The preferred learning strategies of student nurses. *Nursing Review, 10* (3 & 4), 5-8.

Costa, M., Van Rensburg, L., & Rushton, N. (2007). Does teaching style matter? A randomised trial of group discussion versus lectures in orthopaedic undergraduate teaching. *Medical Education, 41*(2), 214-217.

Cowman, S. (1995). The teaching/learning preferences of student nurses in the Republic of Ireland; background issues and a study. *International Journal of Nursing Studies, 32* (2), 126-136.

Cowman, S. (1998). The approaches to learning of student nurses in the Republic of Ireland and Northern Ireland. *Journal of Advanced Nursing, 28* (4), 899-910.

Craik, F., & Lockhart, R. (1972). Depth of processing: A framework for memory research. *Journal of Verbal Learning and Verbal Behavior, 11*, 671-684.

Cross, K. (2000). Cognitive levels of multiple-choice items on teacher-made tests in nursing education. (Doctoral Dissertation, Wayne State University, Michigan). *Dissertation Abstracts International, 61* (10), 3963A.

Curry, L. (1991). Patterns of learning style across selected medical specialties. *Educational Psychology, 11*(3/4), 247-277.

Diekelmann, N. (2005). Creating an inclusive science for nursing education. *Nursing Education Perspectives, 26* (2), 64-64.

Diekelmann, N., & Ironside, P. (2002). Developing a science of nursing education: Innovation with research. *Journal of Nursing Education, 41* (9), 379-380.

Driscoll, M. (2004). *The psychology of learning for instruction* (2nd ed.). Boston: Pearson, Allyn, & Bacon.

Dux, C. (1989). An investigation into whether nurse teachers take into account the individual learning styles of their students when formulating teaching strategies. *Nurse Education Today, 9*, 186-191.

Ehlers, V.J. (2002). Nursing education in the Republic of South Africa. *Nurse Educator, 27* (5), 207-209.

Entwistle, N. (1975). How students learn: Information processing, intellectual development and confrontation. *Higher Education Bulletin, 3*, 129-148.

Entwistle, N. (1994). *Experiences of understanding and strategic studying* (Report No. HE027707). New Orleans, LA: Paper presented at the Annual Meeting of the American Educational Research Association. (ERIC Document Reproduction Service No. ED374704).

Entwistle, N. (1997). Introduction: Phenomenography in higher education. *Higher Education Research and Development, 16* (2), 127-158.

Entwistle, N. (2000, December 22). *How students learn*. Retrieved February 19, 2007, from Higher Education Academy Web site: http://www.ed.ac.uk/etl

Entwistle, N. (2003, March). *Concepts and conceptual framework underpinning the ETL Project*. Retrieved September 16, 2006, from Enhancing Teaching-Learning Environments in Undergraduate Courses Web site: http://www.ed.ac.uk/etl

Entwistle, N., & McCune, V. (2004). The conceptual bases of study strategy inventories. *Educational Psychology Review, 16* (4), 325-345.

Entwistle, N., & Peterson, E. (2004). Conceptions of learning and knowledge in higher education: Relationships with study behaviour and influences of learning environments. *International Journal of Education Research, 41*, 407-428.

Entwistle, N., & Ramsden, P. (1983). *Understanding student learning*. London: Croom Helm.

Entwistle, N., & Tait, H. (1991). Student failure: Disintegrated patterns of study strategies and perceptions of the learning environment. *Higher Education, 21* (2), 249-261.

Entwistle, N., Tait, H., & McCune, V. (2000). Patterns of response to an approaches to studying inventory across contrasting groups and contexts. *European Journal of Psychology of Education, XV* (1), 33-48.

Entwistle, N., & Wilson, J. (1970). Personality, study methods and academic performance, *Universities Quarterly, 21*, 147-166.

Eyres, S., Loustau, A., & Ersek, M. (1992). Ways of knowing among beginning students in nursing. *Journal of Nursing Education, 31*(4), 175-180.

Fealy, G. (2002). Aspects of curriculum policy in preregistration nursing education in the Republic of Ireland: Issues and reflections. *Journal of Advanced Nursing, 37* (6), 558-565.

Gaberson, K. (1996). Test design: putting all the pieces together. *Nurse Educator, 21*(4), 28-33.

Gibbs, G., Lucas, L., & Spouse, J. (1997). The effects of class size and form of assessment on nursing students' performance, approaches to study and course perceptions. *Nurse Education Today, 17*, 311-318.

Guyton, A.C., & Hall, J. E. (2006). Cerebral cortex, intellectual function of the brain, learning, and memory. In A. C. Guyton, & J. E. Hall (Eds.), *Textbook of medical physiology* (11th ed., pp. 723-726). Philadelphia: Elsevier Saunders.

Haas, R., Nugent, K., & Rule, R. (2004). The use of discriminant function analysis to predict student success on the NCLEX-RN. *Journal of Nursing Education, 43* (10), 440-446.

Hadwin, A., & Winne, P. (1996). Study strategies have meager support: A review with recommendations for implementation. *Journal of Higher Education, 67* (6), 692-715.

Hadwin, A., Winne, P., Stockley, D., Nesbit, J., & Woszczyna, C. (2001). Context moderates students' self-reports about how they study. *Journal of Educational Psychology, 93* (3), 477-487.

Haislett, J., Hughes, R., Atkinson, G., & Williams, C. (1993). Success in baccalaureate nursing programs: A matter of accommodation? *Journal of Nursing Education, 32* (2), 64-70.

Higgins, B. (2005). Strategies for lowering attrition rates and raising NCLEX-RN pass rates. *Journal of Nursing Education, 44* (12), 541-547.

Houltram, B. (1996). Entry age, entry mode and academic performance on a Porject 2000 common foundation programme. *Journal of Advanced Nursing, 23*, 1089-1097.

Howard, D., Hayes, M., Solominides, I., & Swannell, M. (2001). Changes in student nurses' approaches to studying, *NT Research, 6* (6), 921-934.

Ivie, S. (1998). Ausubel's learning theory: An approach to teaching higher order thinking skills. *High School Journal, 82*(1), 35-42.

Jacobson, S. F. (2004). Evaluating instruments for use in clinical nursing research. In M. Frank-Stromborg & S. J. Olsen (Eds.), *Instruments for clinical health-care research* (3rd ed., pp. 3-19). Boston: Jones and Bartlett Publishers.

Jeffreys, M. (1998). Predicting nontraditional student retention and academic achievement. *Nurse Educator, 23* (1), 42-48.

Jeffreys, M. (2001). Evaluating enrichment program study groups. *Nurse Educator, 26* (3), 142-149.

Jeffries, P., & Norton, B. (2005). Selecting learning experiences to achieve curriculum outcomes. In D.M. Billings & J.A. Halstead (Eds.), *Teaching in nursing: A guide for faculty* (2nd ed., pp. 187-212). St. Louis, Missouri: Elsevier Saunders.

Johnson & Johnson Services, Inc. (n.d.). Nursing: The Basics. In *DiscoverNursing.com*. Retrieved June 2, 2007, from http://www.discovernursing.com/home

Johnson, J., & Mighten, A. (2005). A comparison of teaching strategies: Lecture notes combined with structured group discussion versus lecture only. *Journal of Nursing Education, 44* (7), 319-322.

Kahn, J. (2006). Factor Analysis in Counseling Psychology Research, Training, and Practice: Principles, Advances, and Applications. *Counseling Psychologist, 34*(5), 684-718.

Keane, M. (1993). Preferred learning styles and study strategies in a linguistically diverse baccalaureate nursing student population. *Journal of Nursing Education, 32* (5), 214-221.

Kiewra, K.A. (1985). Investigating note taking and review: A depth of processing alternative. *Educational Psychologist, 20* (1), 23-32.

Kiewra, K.A. (1987). Notetaking and review: The research and its implications. *Instructional Science,16*, 233-249.

Kiewra, K.A. (2002). How classroom teachers can help students learn and teach them how to learn. *Theory Into Practice, 41* (2), 71-80.

Kiewra, K.A., & Benton, S.L. (1988). The relationship between information –processing ability and notetaking. *Contemporary Educational Psychology, 13*, 33-44.

Kiewra, K.A., Benton, S.L., Kim, S., Risch, N., & Christensen, M. (1995). Effects of notetaking format and study technique on recall and relational performance. *Contemporary Educational Psychology, 20*, 172-187.

Kiewra, K.A., Benton, S.L., & Lewis, L.B. (1987). Qualitative aspects of notetaking and their relationship with information processing ability and academic achievement. *Journal of Instructional Psychology, 14* (3), 110-117.

Knapp, T.R. (1990). Treating ordinal scales as interval scales: An attempt to resolve the controversy. *Nursing Research, 39,* 121-123.

Kyriacos, U., Jordan, S., van den Heever, J. (2005). The biological sciences in nursing; A developing country perspective. *Journal of Advanced Nursing, 52* (1), 91-103.

Kumar, R. (2005). A problem-solving strategy for teaching biosciences to nursing majors. *The ABNF Journal, 16* (5), 93-94.

Kuzul, A. (1999). Sampling in qualitative inquiry. In B.F. Crabtree & W.L. Miller (Eds.), *Doing qualitative research* (2nd Edition), (pp. 33-46). Thousand Oaks: Sage Publications, Inc.

Lapeyre, E. (1992). Nursing students' learning styles: a comparison of degree and non-degree student approaches to studying. *Nurse Education Today, 12* (3), 192-199.

Larsen, P., McGill, J., & Palmer, S. (2003). Factors influencing career decisions: Perspectives of nursing students in three types of programs. *Journal of Nursing Edcuation, 42* (4), 168-173.

Li, S., & Kenward, K. (2006). *Executive summary: A national survey on elements of nursing education—fall 2004.* Retrieved September 16, 2006, from National Council of state Boards of Nursing Web site: http://www.NCSBN.org.

Lincoln, Y. & Guba, E. (1985). *Naturalistic Inquiry.* Beverly Hills: Sage Publishers.

Locke, E.A. (1977). An empirical study of lecture note taking among college students. *Journal of Educational Research, 77,* 93-99.

Lockhart, R., & Craik, F., (1990). Levels of processing: A retrospective commentary on a framework for memory research. *Canadian Journal of Psychology, 44* (1), 87-112.

Lotkowski, V., Robbins, S., & Noeth, R. (2004.). *The role of academic and non-academic factors in improving college retention: ACT policy report.* Retrieved January 30, 2005, from http://www.act.org/research/policy/index.html.

Lusk, B., Russell, L., Rodgers, J., & Wilson-Barnett, J. (2001). Preregistration nursing education in Australia, New Zealand, the United Kingdom, and the United States of America. *Journal of Nursing Education, 40* (5), 197-202.

Mansouri, P., Soltani, F., Rahemi, S., Nasab, M., Ayatollahi, A., & Nekooeian, A. (2006). Nursing and midwifery students' approaches to study and learning. *Journal of Advanced Nursing, 54*(3), 351-358.

Marton, F. (1986). Phenomenography—A research approach to investigating different understandings of reality. *Journal of Thought, 21*, 28-49.

Marton, F., & Pong, W. (2005). On the unit of description in phenomenography. *Higher Education Research and Development, 24* (4), 335-248.

Marton, F. & Säljö R. (1976a). On qualitative differences in leaning. I—Outcome and process. *British Journal of Educational Psychology, 46*, 4-11.

Marton, F. & Säljö R. (1976b). On qualitative differences in leaning. II—Outcome as a function of the learner's conception of the task. *British Journal of Educational Psychology, 46*, 115-127.

Masters, J., Hulsmeyer, B., Pike, M., Leichty, K., Miller, M., & Verst, A. (2001). Assessment of multiple-choice questions in selected test banks accompanying text books used in nursing education. *The Journal Of Nursing Education, 40* (1), 25-32.

McCarthy, G. (1999). Nursing and nursing education: Nursing and nursing education in Ireland. *Image: Journal of Nursing Scholarship, 21* (2), 191-193.

McDonald, M.E. (2002). *Systematic assessment of learning outcomes: Developing multiple-choice exams*. Boston: Jones and Bartlett Publishers.

McGeever, B. (1994). An analysis of the learning and study strategies of upper division baccalaureate nursing students. (Doctoral dissertation, Widener University School of Nursing, Chester, PA., 1990). *Dissertation Abstracts International, 55* (12), 5286B.

McKeachie, W., & Svinicki, M. (2006). *McKeachie's teaching tips: Strategies, research, and theory for college and university teachers* (12th ed.). New York: Houghton Mifflin Company.

Mertler, C., & Vannatta, R. (2002). *Advanced and multivariate statistical methods* (2nd ed.). Los Angeles: Pyrczak Publishing.

Meyer, J., & Dunne, T. (1991). Study approaches of nursing students: Effects of an extended clinical context. *Medical Education, 25*, 497-516.

Meyer, J., Parsons, P., & Dunne, T. (1990). Individual study orchestrations and their association with learning outcomes. *Higher Education, 20* (1), 67-89.

Midwest Nursing Research Society. (2002). *Guidelines for scientific integrity* (2nd ed.). Wheat Ridge, CO: Author.

Munro, B. (2005). Logistic regression. In B. Munro (Ed.), *Statistical methods for health care research* (5th ed., pp. 301-318). Philadelphia: Lippincott Williams & Wilkins.

National Center for Education Statistics (NCES; 2005). *IPEDS data feedback report 2005: Allen College.* Washington, D.C.: U.S. Department of Education, National Center for Education Statistics.

National League for Nursing. (2005). *Transforming nursing education* (Position Statement). New York: Author. Available http://www.nln.org

National League for Nursing (2006a). Executive summary from the Nursing Data Review, academic year 2004-2005, baccalaureate, associate degree, and diploma programs. *Nursing Education Perspectives, 27* (5), 287-289.

National League for Nursing. (2006b). *Excellence in nursing education model.* New York: Author. Available http://www.nln.org/

Newble, D., & Jaeger, K. (1983). The effect of assessments and examinations on the learning of medical students. *Medical Education, 17* (3), 165-71.

Norbeck, J. (1995). Who is our consumer? Shaping nursing programs to meet emerging needs. *Journal of Professional Nursing, 11* (60, 325-331.

Novak, J. (1998). *Learning, creating, and using knowledge: Concept maps as facilitative tools in schools and corporations.* Erlbaum Associates: Mahway, N.J.

O'Connor, A.B. (2001). Chapter 1: Goals of clinical nursing education. In A.B. O'Connor (Ed.), *Clinical instruction and evaluation: A teaching resource* (pp. 1-12). Boston: Jones & Bartlett Publishers.

Ofori, R. (2000). Age and 'type' of domain specific entry qualifications as predictors of student nurses' performance in biological, social and behavioral sciences in nursing assessments. *Nurse Education Today, 20,* 298-310.

Ofori, R., & Charlton, J. P., (2002). A path model of factors influencing the academic performance of nursing students. *Journal of Advanced Nursing, 38* (5), 507-515.

Ostmoe, P., Van Hoozer, H., Scheffel, A., & Crowell, C. (1984). Learning style preferences and selection of learning strategies: Consideration and implications for nurse educators. *Journal of Nursing Education, 23* (1), 27-30.

Parker, K.J. (1993). Lecturing and loving it: Applying the information processing method. *Clearing House, 67* (1), 8-11.

Pask, G. (1976). Styles and strategies of learning. *British Journal of Educational Psychology, 46* (2), 128-148.

Peter, C. (2005). Learning—Whose responsibility is it? *Nurse Educator, 30* (4), 159-165.

Peverly, S., Ramaswamy, V., Brown, C., Sumowski, J., Alidoost, M., & Garner, J. (2007). What predicts skill in lecture note taking? *Journal of Educational Psychology, 99* (1), 167-180.

Pintrich, P. R. (2004). A conceptual framework for assessing motivation and self-regulated learning in college students. *Educational Psychology Review, 16* (4), 385-407.

Pintrich, P.R., Smith, D.F., Garcia, T., & McKeachie, W.J. (1991). *A manual for the use of the Motivated Strategies for Learning Questionnaire (MSLQ) (Tech. Rep. No. 91-B-004)*. Ann Arbor, MI: University of Michigan, School of Education. National Center for Research to Improve Postsecondary Teaching and Learning.

Piolat, A., Olive, T., & Kellogg, R.T. (2005). Cognitive effort during note taking. *Applied Cognitive Psychology, 19* (3), 291-312.

Potolsky, A., Cohen, J., & Saylor, C. (2003). Academic performance of nursing students: Do prerequisite grades and tutoring make a difference? *Nursing Education Perspectives, 24* (5), 246-250.

Rakow, S. (1992). Six steps to more meaning. *Science Scope, 16* (2), 18-19.

Ramsden, P. (1991). A performance indicator of teaching quality in higher education: The Course Experience Questionnaire. *Studies in Higher Education, 16* (2), 129-150.

Robbins, S., Lauver, K., Le, H., Davis, D., Langley, R., & Carlstrom, A (2004). Do psychosocial and study skill factors predict college outcomes? A meta-analysis. *Psychological Bulletin, 130* (2), 261-288.

Rognstad, M., Aasland, O., & Granum, V. (2004). How do nursing students regard their future career? Career preferences in the post-modern society. *Nurse Education Today, 24*, 493-500.

Rowles, C., & Brigham, C. (2002). Strategies to promote critical thinking and active learning. In D.M. Billings & J.A. Halstead (Eds.), *Teaching in nursing: A guide for faculty* (2nd ed., pp. 283-316). St. Louis, Missouri: Elsevier Saunders.

Salamonson, Y., & Andrew, S. (2006). Academic performance in nursing students: Influence of part-time employment, age and ethnicity. *Journal of Advanced Nursing, 55* (3), 342-349.

Salsali, M. (1999). Scenario—Nursing and nursing education: Nursing and nursing education in Iran. *Image: Journal of Nursing Scholarship, 21* (2), 190-191.

Sand-Jecklin, K., & Schaffer, A. (2006). Nursing students' perceptions of their chosen profession. *Nursing Education Perspectives, 27* (3), 130-135.

Sayles, S., Shelton, D., & Powell, H. (2003). Predictors of success in nursing education. *The ABNF Journal, 14* (6), 116-120.

Scouller, K. (1998). The influence of assessment method on students' learning approaches: Multiple choice question examination vs. assignment essay. *Higher Education, 35,* 453-472.

Seidl, A., & Sauter, D. (1990). The new non-traditional student in nursing. *Journal of Nursing Education, 29* (1), 13-19.

Seldomridge, L., & DiBartolo, M. (2004). Can success and failure be predicted fro baccalaureate graduates on the computerized NCLEX-RN? *Journal of Professional Nursing, 20* (6), 361-368.

Sellers, E. (2002). Images of a new sub-culture in the Australian university: Perceptions of non-nurse academics of the discipline of nursing. *Higher Education, 43,* 157-172.

Smith , J., & Crawford, L. (2004a). *Executive summary: Report of findings from the 2003 Employers Survey.* Retrieved September 16, 2006, from National Council of state Boards of Nursing Web site: http://www.NCSBN.org

Smith , J., & Crawford, L. (2004b). *Executive summary: Report of findings from the Practice and Professional Issues Survey spring 2003.* Retrieved September 16, 2006, from National Council of state Boards of Nursing Web site: http://www.NCSBN.org

Snelgrove, S., & Slater, J. (2003). Approaches to learning: Psychometric testing of a study process questionnaire. *Journal of Advanced Nursing, 43* (5), 496-505.

Speziale, H. & Jacobson, L. (2005). Trends in registered nurse education programs 1998-2008. *Nursing Education Perspectives, 26* (4), 230-235.

Stewart, I. (1943). *The education of nurses: Historical foundations and modern trends,* New York: The Macmillan Co.

Stiernborg, M., Guy, J., & Tinker, R. (1997). Nursing students' approaches to studying. *Nurse Education Today, 17* (2),121-127.

Stuenkel, D. (2006). At-risk students: do Theory grades + standardized examinations = success? *Nurse Educator, 31* (5), 207-212.

Sutcliffe, L. (1993). An investigation into whether nurses change their learning style according to subject area studied. *Journal of Advanced Nursing, 18,* 647-658.

Sweeney, J.F. (1990). The learner-centredness of two registered general nursing and two registered mental nursing courses as perceived by third-year nursing students. *Journal of Advanced Nursing, 15* (10), 1208-19

Symes, L., Tart, K., & Travis, L. (2005). An evaluation of the nursing success program: reading comprehension, graduation rates, and diversity. *Nurse Educator, 30* (5), 217-220.

Symes, L., Tart, K., Travis, L., & Toombs, M. (2002). Developing and retaining expert learners: The student success program. *Nurse Educator, 27* (5), 227-231.

Tait, H., & Entwistle, N. (1996). Identifying students at risk through ineffective study strategies. *Higher Education, 31,* 97-116.

Tait, H., Entwistle, N., & McCune, V. (1998). ASSIST: A reconceptualization of the Approaches to Studying Inventory. In Rust, C. (ED.), *Improving student learning: Improving students as learners* (pp. 252-271). Oxford: Oxford Centre for Staff and Learning Development.

Thomas, P., & Bain, J. (1982). Consistency in learning strategies. *Higher Education, 11* (3), 249-259.

Thompson, C. & Crutchlow, E. (1993). Learning style research: A critical review of the literature and implications for nursing education. *Journal of Professional Nursing, 9* (1), 34-40.

Thornton, T. (1997). Attitudes towards the relevance of biological, behavioural and social sciences in nursing education. *Journal of Advanced Nursing, 26,* 180-186.

Titsworth, S., & Kiewra, K. (2004). Spoken organizational lecture cues and student notetaking as facilitators of student learning. *Contemporary Educational Psychology, 29,* 447-461.

Tiwari, A., Chan, S., Wong, E., Wong, D., Ghui, C., Wong, A., & Patil, N. (2006). The effect of problem-based learning in the context of clinical nursing education. *Nurse Education Today, 26,* 430-438.

Trnobranski, P. (1996). Biological sciences in Project 2000: An exploration of status. *Journal of Advanced Nursing, 23,* 1071-1079.

U.S. Department of Health and Human Services Health Resources and Services Administration (2004, September) *What is behind HRSA's projected supply, demand, and shortage of registered nurses?* Retrieved February 12, 2007, from http://bhpr.hrsa.gov/healthworkforce/reports/

U.S. Department of Health and Human Services Health Resources and Services Administration (2006, March). *The registered nurse population: Findings from the March 2004 National Sample Survey of Registered Nurses.* Retrieved April 15, 2007, from http://www.hrsa.gov/

U.S. Department of Labor-Bureau of Labor Statistics (2006). Registered nurses. In U.S. Department of Labor Bureau of Labor Statistics, *Occupational Outlook Handbook 2006-2007 Edition.* Retrieved February 12, 2007, from http://www.bls.gov/home.htm

Van Meter, P., Yokoi, & Pressley, M. (1994). College students' theory of note-taking from their perceptions of note-taking. *Journal of Educational Psychology, 86* (3), 323-338.

Varnell, G. (2003). Nursing education. In J. Zerwekh & J.C. Clayborn (Eds.), *Nursing today: Transitions and trends* (4th ed., pp. 79-100). St. Louis, Missouri: Saunders an Imprint of Elsevier.

Vaughan J. (1990). Student nurse attitudes to teaching/learning methods. *Journal of Advanced Nursing, 15* (8), 925-933.

Walker, J., Martin, T., White, J., Elliott, R., Norwood, A., Mangum, C., & Haynie, L. (2006). Generational (age) differences in nursing students' preferences for teaching methods. *Journal of Nursing Education, 45* (9), 371-374.

Watkins, D. (1982). Factors influencing the study methods of Australian tertiary students. *Higher Education, 11* (4), 369-380.

Watson, R. (2003). Irish nursing comes of age. *Journal of Clinical Nursing, 12,* 455-456.

Weinstein, C., & Mayer, R. (1986). The teaching of learning strategies. In M. Wittrock (Ed.), *Handbook of research on teaching* (pp. 315-327). New York: Macmillan.

Weinstein, C., & Palmer, D. (2002). *LASSI user's manual for those administering the Learning and Study Strategies Inventory* (2nd ed.). Clearwater, FL: H&H Publishing Company, Inc.

Weinstein, C., Schulte, A., & Palmer, D., (1987). *Learning and study strategies inventory (LASSI)*. Clearwater, FL: H & H Publishing Co.

Wells, D., & Higgs, Z. (1990). Learning styles and learning preferences of first and fourth semester baccalaureate degree nursing students. *Journal of Nursing Education, 29* (9), 385-90.

Wells, M. (2003). An epidemiologic approach to addressing student attrition in nursing programs. *Journal of Professional Nursing, 19* (3), 230-236.

White, W. F. (1996). What every teacher should know about the functions of learning in the human brain. *Education, 117*(2), 290-296.

Williams, B., Wertenberger, D., & Gushuliak, T. (1997). Why students choose nursing. *Journal of Nursing Education, 36*, 346-348.

Wirt, J., Choy, S., Greald, D., Provasnik, S., Rooney, P., & Watanabe, S. (2001). Section 5—The context of postsecondary education. In [Authors], *The condition of education 2001* (pp. 75-84) (NCES Publication No. 2001072). U.S. Department of Education, National Center for Education Statistics. Washington, D.C: U.S. Government Printing Office. Retrieved July 11, 2007, from http://nces.ed.gov/

Wirt, J., Choy, S., Rooney, P., Provasnik, S., Sen, A., & Tobin, R. (2004). Section 5—The context of postsecondary education. In [Authors], *The condition of education 2004* (pp. 79-85) (NCES Publication No. 2004077). U.S. Department of Education, National Center for Education Statistics. Washington, D.C: U.S. Government Printing Office. Retrieved February 17, 2007, from http://nces.ed.gov/

Worthington, R., & Whittaker, T. (2006). Scale development research: A content analysis and recommendations for best practices. *The Counseling Psychologist, 34* (6), 806-838.

APPENDIX A: TABLES

Table A1

Allen College Grading Scale

Letter Grade	Grade Points	Score Percentage Range
A	4.0	93-100
A-	3.7	90-92
B+	3.3	87-89
B	3.0	83-86
B-	2.7	80-82
C+	2.3	77-79
C	2.0	73-76
C-	1.7	70-72
D	1.0	60-69
F	0	<60

Table A2

Lancaster Inventory (LI) Scales

Lancaster Inventory Scale	Description
Achieving:	Organized study methods, desire for success. Motivated to succeed.
Reproducing	Tendency to memorize for exam, motivated by desire not to fail.
Meaning	Motivated by desire to understand for personal value.
Comprehension Learning Style	Student uses analogies to explain topics, looks for relationships, seeks general understanding; divergent thinking used to map out the topic.
Operation Learning Style	Student concentrates systematically on specific details and facts
Versatile Approach to learning	Extent to which student uses both operation and comprehension styles.

Pathological Symptoms
   Globetrotting
   Improvidence
	Extent to which student relies excessively on either comprehension or operation learning. Use of illogical analogies and jumping to conclusions is globetrotting; failure to use valid analogies is improvidence.

Prediction of Academic Success	Measure of extent to which learners will succeed academically.

Table A3

Approaches to Studying Inventory (ASI) Scales

ASI Scales	Description
Meaning Orientation (Referred to as Deep Approach to studying in later instruments)	
Deep Approach	High scores indicate intent to understand the meaning of content and apply it to real life. This approach requires a conscious effort to understand new information.
Use of Evidence	High scores indicate careful and critical consideration of evidence before drawing conclusions. This approach requires scrutiny of evidence that is used to support an argument.
Relating Ideas	High scores indicate student relates new information to previous knowledge and other coursework. This approach requires linkages between and within topics and relating information to real life and personal experience.
Intrinsic Motivation	High scores indicate personal interest in content. This approach requires the student to feel genuine interest in content, over and above course requirements.
Reproducing Orientation (Referred to as Surface Apathetic Approach in later instruments)	
Surface Approach	High scores indicate reliance on memorization or rote learning.
Syllabus-Boundness	High scores indicate that student restricts learning to what is in the course syllabus and its specifically delineated tasks. Adopting this approach means the student is unlikely to venture beyond minimum course requirements.
Fear of Failure	High scores indicate lack of self-confidence and anxious awareness of test requirements. The feels fear related to exams, speaking in class, and graded assignments.
Improvidence	High scores indicate student does not look for relationships between ideas and focuses only on isolated facts. Adopting this approach indicates disregard for overall scheme and the purpose of facts within that scheme. Steiernborg et al.(1997) included this scale under Non-Academic Orientation.

(table continues)

ASI Scales	Description
Strategic Orientation (formerly called Achieving Orientation; called Strategic Approach in later instruments)	
Strategic Approach	High scores indicate student actively seeks information about test requirements and strives to achieve positive regard from instructors. Adopting this approach indicates manipulation of resources to meet perceived academic requirements.
Achievement Motivation	High scores indicate competitiveness and self-confidence, motivated by the desire for academic success. Adopting this approach requires motivation to succeed, especially when competing with others.
Extrinsic Motivation	High scores indicate student perceives grades and achievement as the main source of motivation to learn. Adopting this approach indicates the student is seeking some end, such as a job or career. Steiernborg et al. (1997) included this scale under Reproducing Orientation.
Non-Academic Orientation (Not included as a Scale in ASSIST)	
Disorganized Studying	Low scores suggest student is organizing time effectively and is not disorganized. Higher scores would indicate general disorganization manifested as poor time management, procrastination, and easy distraction. Stiernborg, Guy, & Tinker (1997) included this scale under Strategic (Achieving) Orientation.
Negative Attitudes	High scores indicate student is not engaged with content or course work and feels pessimistic and disillusioned about college. Stiernborg et al.(1997) included this scale under Strategic (Achieving) Orientation.
Globe Trotting	High scores indicate a tendency to make early judgments about content without sufficient evidence. This approach suggests an inability to identify sufficient relevant detail to warrant conclusions.
Pask's Serialist and Holist Scales	
Comprehension Learning	High scores indicate a tendency to use illustrations, analogies, and intuition to get a sense of the whole scheme in terms of what is being learned. This approach indicates a holist learning style in which analogies and examples are created to explain topics, demonstrate relationships, and seeks general understanding.
Operation Learning	High scores indicated a tendency to concentrate on details and parts of a scheme. This approach indicates a serialist learning style in which students concentrates systematically on specific details and facts, but do not necessarily synthesize those facts into a whole scheme.

Table A4

Revised Approaches to Studying (RASI) Scales

RASI Scales
Deep approach (12 items): Formerly called Meaning Orientation in ASI.
Surface Approach (12 items): Formerly called Reproducing Orientation on ASI.
Strategic Approach (12 items): Formerly called Achieving Orientation on ASI.
Lack of Direction (4 items)
Academic Self-confidence (4 items)

Table A5

Scale and Subscale Items of the R-SPQ-2F

R-SQP-2F Items

Deep Approach Scale—Deep Motive Subscale Items

1. I find that at times studying gives me a feeling of deep personal satisfaction.

5. I feel that virtually any topic can be highly interesting once I get into it.

9. I find that studying academic topics can at times be as exciting as a good novel or movie.

13. I work hard at my studies because I find the material interesting.

17. I come to most classes with questions in mind that I want answering.

Deep Approach Scale—Deep Strategy Subscale Items

2. I find that I have to do enough work on a topic so that I can form my own conclusions before I am satisfied.

6. I find most new topics interesting and often spend extra time trying to obtain more information about them.

10. I test myself on important topics until I understand them completely.

14. I spend a lot of my free time finding out more about interesting topics which have been discussed in different classes.

18. I make a point of looking at most of the suggested readings that go with the lectures.

Surface Approach Scale—Surface Motive Subscale Items

3. My aim is to pass the course while doing as little work as possible.

7. I do not find my course very interesting so I keep my work to the minimum.

11. I find I can get by in most assessments by memorising key sections rather than trying to understand them.

15. I find it is not helpful to study topics in depth. It confuses and wastes time, when all you need is a passing acquaintance with topics.

19. I see no point in learning material which is not likely to be in the examination.

Surface Approach Scale—Surface Strategy Subscale Items

4. I only study seriously what's given out in class or in the course outlines.

8. I learn some things by rote, going over and over them until I know them by heart even if I do not understand them.

12. I generally restrict my study to what is specifically set as I think it is unnecessary to do anything extra.

16. I believe that lecturers shouldn't expect students to spend significant amounts of time studying material everyone knows won't be examined.

20. I find the best way to pass examinations is to try to remember answers to likely questions.

Table A6

Characteristics of Accessible Population, Non-participants, and Sample

Characteristics	Population		Non-participants		Sample	
	M	SD	M	SD	M	SD
Age [a]	22.48	6.31	20.00	1.14	22.74	6.56
Grade percentage [a]	78.10	10.60	69.53	11.39	78.98	10.24
GPA [b]	3.17	0.44	2.94	0.50	3.19	0.43
ACT score [c]	21.57	2.95	20.24	2.22	21.72	2.98
Sex	N	%	N	%	N	%
Females	181	94.30	18	0	163	93.7
Males	11	5.70	0	0	11	6.3
Number of Students in ASSIST Course						
API	65	33.9	7	38.9	58	33.3
APII	24	12.5	9	50.0	15	8.6
Patho	67	34.9	2	11.1	65	37.4
NCAC	36	18.8	0	0	36	20.7

(table continues)

Characteristics	Population		Non-participants		Sample	
	N	*%*	*N*	*%*	*N*	*%*
Number of Students Failing ASSIST Course						
API	20	15.1	4	22.2	16	9.2
APII	7	3.6	5	27.8	2	1.1
Patho	12	6.3	1	5.6	11	6.3
NCAC	0		0		0	
All ASSIST Courses	39	20	10	55.6	29	39.2

Note: Some data was not available for all students, which is accounted for in table notations. For example, nine API students had not established a GPA as they were first semester students. [a] Population N = 192; Non-participant N = 18; Sample N = 174. [b] Population N = 183; Non-participant N = 18; Sample N = 165. [c] Population N = 173; Non-participant N = 17; Sample N = 156.

Table A7

Mean Study Approach Scale Scores within each Course for which Participants Completed the ASSIST

| | | | | | | | 95% Confidence Interval | |
Approach and Course	N	Minimum	Maximum	M	SD	SE	Lower	Upper
Strategic Approach								
Adult Medical Surgical Nursing	36	2.80	4.95	3.9403	.50707	.08451	3.7687	4.1118
Anatomy & Physiology I	58	2.20	4.60	3.7724	.56056	.07360	3.6250	3.9198
Anatomy & Physiology II	14	2.40	4.80	3.9071	.64446	.17224	3.5350	4.2792
Pathophysiology	66	2.40	4.90	3.7735	.58797	.07237	3.6289	3.9180
Total	174	2.20	4.95	3.8184	.56732	.04301	3.7335	3.9033
Deep Approach								
Adult Medical Surgical Nursing	36	2.25	4.50	3.6719	.54124	.09021	3.4887	3.8550
Anatomy & Physiology I	58	2.31	4.81	3.6056	.58104	.07629	3.4528	3.7584
Anatomy & Physiology II	14	2.63	4.56	3.5759	.51022	.13636	3.2813	3.8705
Pathophysiology	66	2.44	4.88	3.7045	.51697	.06363	3.5775	3.8316
Total	174	2.25	4.88	3.6545	.54111	.04102	3.5735	3.7354

(table continues)

Approach and Course	N	Minimum	Maximum	*M*	*SD*	*SE*	95% Confidence Interval	
							Lower	Upper
Surface Apathetic Approach								
Adult Medical Surgical Nursing	36	1.69	4.06	2.8993	.62683	.10447	2.6872	3.1114
Anatomy & Physiology I	58	1.81	4.69	3.1121	.66172	.08689	2.9381	3.2861
Anatomy & Physiology II	14	2.25	4.06	2.9420	.53398	.14271	2.6337	3.2503
Pathophysiology	66	1.81	4.38	2.9744	.60566	.07455	2.8255	3.1233
Total	174	1.69	4.69	3.0022	.62438	.04733	2.9087	3.0956

Table A8

Frequency and percentage of participants preferring types of courses and teaching related to the Deep Approach—Supporting Understanding

Scale Item	NCAC		API		APII		Patho		All Participants	
	N	%	N	%	N	%	N	%	N	%
b. Instructors who encourage us to think for ourselves and show us how they themselves think										
Definitely dislike	1	0.6	1	0.6	0		0		2	1.1
Dislike to some extent	2	1.1	5	2.9	1	0.6	5	2.9	13	7.5
Unsure	0		3	1.7	2	1.1	4	2.3	9	5.2
Like to some extent	15	8.6	33	19.0	9	5.2	33	19.0	90	51.7
Definitely like	18	10.3	16	9.2	2	1.1	24	13.8	60	34.5
c. Exams, which allow me to show that I've thought about the course material for myself.										
Definitely dislike	0		2	1.1	0		0		2	1.1
Dislike to some extent	5	2.9	14	8.0	4	2.3	15	8.6	38	21.8
Unsure	2	1.1	6	3.4	1	0.6	7	4.0	16	9.2
Like to some extent	19	10.9	20	11.5	7	4.0	31	17.8	77	44.3
Definitely like	10	5.7	16	9.3	2	1.1	13	7.5	41	23.6

(table continues)

Scale Item	NCAC		API		APII		Patho		All Participants	
	N	%	N	%	N	%	N	%	N	%
f. Courses where we're encouraged to read around the subject a lot for ourselves.										
Definitely dislike	6	3.4	4	2.3	2	1.1	13	7.5	25	14.4
Dislike to some extent	12	6.9	31	17.8	9	5.2	29	16.7	81	46.6
Unsure	6	3.4	3	1.7	0		6	3.4	15	8.6
Like to some extent	9	5.2	16	9.2	3	1.7	15	8.6	43	24.7
Definitely like	3	1.7	4	2.3	0		3	1.7	10	5.7
g. Books which challenge you and provide explanations which go beyond the lectures.										
Definitely dislike	3	1.7	3	1.7	1	0.6	5	2.9	12	6.9
Dislike to some extent	8	4.6	19	10.9	6	3.4	25	14.4	58	33.3
Unsure	4	2.3	8	4.6	0		6	3.4	18	10.3
Like to some extent	13	7.5	22	12.6	5	2.9	21	12.1	61	35.1
Definitely like	8	4.6	6	3.4	2	1.1	9	5.2	25	14.4

Note: Items are lettered according to their appearance in the ASSIST. Frequencies are accompanied by percentages in parentheses.

Table A9

Frequency and percentage of participants preferring types of courses and teaching related to the Surface Approach—Transmitting Information

Subscale Item	NCAC		API		APII		Patho		All Participants	
	N	%	N	%	N	%	N	%	N	%
a. Instructors who tell us exactly what to put down in our notes.										
Definitely dislike	0		0		0		0		0	
Dislike to some extent	3	1.7	1	0.6	1	0.6	5	2.9	10	5.7
Unsure	0		0		0		3	1.7	3	1.7
Like to some extent	16	9.2	15	8.6	6	3.4	22	12.6	59	33.9
Definitely like	17	9.8	42	42.1	7	4.0	36	20.7	102	58.6
d. Exams or tests which need only the material provided in our lecture notes.										
Definitely dislike	1	0.6	0		0		0		1	
Dislike to some extent	3	1.7	1	0.6	1	0.6	7	4.0	12	0.6
Unsure	1	0.6	0		0		1	0.6	2	1.1
Like to some extent	17	9.8	12	6.9	8	4.6	25	14.4	62	35.6
Definitely like	14	8.0	45	25.9	5	2.9	33	19.0	97	55.7

(table continues)

Subscale Item	NCAC		API		APII		Patho		All Participants	
	N	%	N	%	N	%	N	%	N	%
e. Courses in which it's made very clear just which books we have to read.										
Definitely dislike	1	0.6	0		0		0		1	0.6
Dislike to some extent	2	1.1	3	1.7	0		4	2.3	9	5.2
Unsure	0		1	0.6	1	0.6	5	2.9	7	4.0
Like to some extent	15	8.6	12	6.0	2	1.1	14	8.0	43	24.7
Definitely like	18	10.3	42	24.1	11	6.3	43	24.7	114	65.5
h. Books which give you definite facts and information which can easily be learned.										
Definitely dislike	0		1	0.6	0		0		1	0.6
Dislike to some extent	2	1.1	1	0.6	0		2	1.1	5	2.9
Unsure	1	0.6	1	0.6	0		2	1.1	4	2.3
Like to some extent	9	5.2	17	9.8	4	2.3	20	11.5	50	28.7
Definitely like	24	13.8	38	21.8	10	5.7	42	24.1	114	65.5

Table A10

Observed Variables with Correlated Error Terms (Theta EPSs)

Significantly Correlated Observed Variables	r	t
2. Deep Approach—Relating Ideas and 3. Deep Approach –Use of Evidence	.38	4.00
1. Deep Approach—Seeking Meaning and 4. Deep Approach—Interest in Ideas	.71	-4.33
3. Deep Approach—Use of Evidence and 9. Strategic approach—Monitoring Effectiveness	.30	3.15
7. Strategic Approach—Alertness to Assessment Demands and 13. Surface Apathetic—Fear of Failure	.67	2.98
11. Surface Apathetic—Unrelated Memorizing and 13. Surface Apathetic—Fear	.83	3.88

Note: specific p values were not produced by LISREL. T values greater than 2.0 are considered statistically

significant (p < .05; Aroian & Norris, 2005, p. 367).

Table A11

Deep, Strategic, and Surface Apathetic Mean Scale Scores and Mean Scale Score Differences within Each Study Approach Group

Dominant Study Approach Group Data	*M*	*SD*	Minimum	Maximum
Deep Approach Group (N=45)				
Deep Approach Mean Scale Score	4.03	0.44	3.06	4.88
Strategic Approach Mean Scale Score	3.65	0.49	2.50	4.55
Surface Apathetic Approach Mean Scale Score	2.92	0.54	1.75	3.69
Deep – Strategic mean difference	0.37	0.28	0.01	1.53
Deep – Surface mean difference	1.10	0.79	0.06	2.75
Strategic – Surface mean difference	0.73	0.84	0.63	2.25
Strategic Approach Group (N=95)				
Strategic Approach Mean Scale Score	4.13	0.38	3.25	4.95
Deep Approach Mean Scale Score	3.68	0.44	2.56	4.81
Surface Apathetic Approach Mean Scale Score	2.76	0.51	1.69	4.06
Strategic – Deep mean difference	0.46	0.31	0.01	1.28
Strategic – Surface mean difference	1.38	0.71	0.04	3.06
Deep – Surface mean difference	0.92	0.73	0.69	2.94
Surface Apathetic Approach Group (N=33)				
Surface Apathetic Approach Mean Scale Score	3.80	0.32	3.13	4.69
Strategic Approach Mean Scale Score	3.15	0.43	2.20	3.80
Deep Approach Mean Scale Score	3.09	0.46	2.25	4.13
Surface – Strategic mean difference	0.65	0.43	0.01	1.53
Surface – Deep mean difference	0.72	0.49	0.13	1.94
Strategic – Deep mean difference	0.06	0.52	1.16	1.19

(table continues)

Dominant Study Approach Group Data	*M*	*SD*	Minimum	Maximum
Deep and Surface Apathetic Group (N=1)				
Deep Approach Mean Scale Score	3.50		3.50	3.50
Surface Apathetic Approach Mean Scale Score	3.50		3.50	3.50
Strategic Approach Mean Scale Score	3.45		3.45	3.45
Deep – Surface mean difference	0.00		0.00	0.00
Deep – Strategic mean difference	0.05		0.05	0.05
Surface – Strategic mean difference	0.05		0.05	0.05

Table A12

Tukey HSD Comparisons of Differences in Dominant Mean Scale Scores among Dominant Study Approach Groups

Mean Scale Scores Compared	*M* difference	*SE*	*P*	95% Confidence Interval	
				Lower	Upper
Deep Approach Mean Scale Score Comparisons					
Deep Approach group compared to Strategic Approach group	0.35080	0.08047	.000	0.1605	0.5411
Deep Approach group compared to Surface Approach group	0.94255	0.10192	.000	0.7016	1.1835
Surface Apathetic Approach Mean Scale Score Comparisons					
Surface Approach group compared to Deep Approach group	0.87753	0.11134	.000	0.6143	1.1408
Surface Approach group compared to Strategic Approach group	1.04456	0.09817	.000	0.8125	1.2767
Strategic Approach Mean Scale Score Comparisons					
Strategic Approach group compared to Deep Approach group	0.47766	0.07633	.000	0.2972	0.6581
Strategic Approach group compared to Surface Approach group.	0.98211	0.08523	.000	0.7806	1.1836

Table A13

Paired T-test comparisons of Deep, Strategic, and Surface Apathetic Mean Scale Scores within each Dominant Study Approach Group

Dominant Study Approach Group	M	SD	SEM	95% Confidence Interval of the Difference (Paired Differences)		T	df
				Lower	Upper		
Deep Approach Group							
Deep Approach Scale Score Mean vs. Surface Approach Scale Score Mean	1.10	0.79	.11795	.86645	1.34188	9.36	44
Deep Approach Scale Score Mean vs. Strategic Approach Scale Score Mean	0.37	0.28	.04201	.28866	.45800	8.89	44
Strategic Approach Group							
Strategic Approach Scale Score Mean vs. Deep Approach Scale Score Mean	0.46	0.31	.03152	-.51772	-.39254	-14.44	94
Strategic Approach Scale Score Mean vs. Surface Approach Scale Score Mean	1.38	0.71	.07243	-1.51934	-1.23171	-18.99	94
Surface Approach Group							
Surface Approach Scale Score Mean vs. Deep Approach Scale Score Mean	0.72	0.49	.08489	-.88883	-.54299	-8.43	32
Surface Approach Scale Score Mean vs. Strategic Approach Scale Score Mean	0.65	0.43	.07405	.50030	.80197	8.79	32

Note: All differences are significant at p < .001.

Table A14

Correlation between Hours Spent in Paid Employment and Preferences for Course Characteristics and Teaching Methods

Preferences for Course Characteristics and Teaching Methods Scale Items	*Rho*	*p* (2-tailed)
Preferences for Teaching Surface Approach—Transmitting Information Scale Score	-.067	.381
Items on Surface Approach—Transmitting Information Scale		
a. Instructors who tell us exactly what to put down in our notes	-.038	.622
d. Exams or tests which need only the material provided in our lecture notes	-.061	.428
e. Courses in which it's made very clear just which books we have to read	-.070	.363
h. books which give you definite facts and information which can easily be learned	.002	.977
Preference for teaching Deep Approach—Supporting Understanding Scale Score	-.041	.591
Items on Deep Approach—Supporting Understanding Scale		
b. Instructors who encourage us to think for ourselves and show us how they themselves think	-.073	.342
c. Exams which allow me to show that I've thought about the course material for myself	-.066	.394
f. Courses where we're encouraged to read around the subject a lot for ourselves	.057	.458
g. Books which challenge you and provide explanations which go beyond the lectures	-.049	.522

Table A15

Modification Indices for Theta-EPS Error Variances

Observed Variables	Deep					Strategic				Surface Apathetic			
	1	2	3	4	5	6	7	8	9	10	11	12	13
1. Seeking meaning	--												
2. Relating ideas	0.51	--											
3. Use of evidence	0.01	--	--										
4. Interest in ideas	--	1.41	0.18	--									
5. Organized studying	0.15	0.02	0.44	0.04	--								
6. Time management	1.76	2.58	1.10	0.77	4.79	--							
7. Alertness to assessment	6.41	0.90	2.03	0.80	0.90	6.25	--						
8. Achieving	0.51	0.00	0.11	0.34	2.18	0.00	0.38	--					
9. Monitoring effectiveness	0.93	1.10	--	2.71	0.81	0.04	3.83	1.72	--				
10. Lack of purpose	1.86	1.97	0.52	0.61	1.16	0.70	1.02	1.19	0.06	--			
11. Unrelated memorizing	1.48	0.17	0.70	1.07	2.82	0.04	0.15	1.73	0.21	0.85	--		
12. Syllabus-Boundness	0.13	0.52	0.64	2.72	0.08	0.14	2.12	1.41	0.44	0.16	3.89	--	
13. Fear of failure	4.90	0.01	4.42	0.04	0.03	1.14	--	1.95	0.32	0.60	--	3.49	

Note: the omitted Theta-EPS error variances off the diagonal correspond to the correlated error terms described in Table A10.

236

Table A16

Study Tactics, Course, and Level of Academic Achievement for Students who were Interviewed

Pseudonym	Course	Grade	Reviewed Notes	Used Textbook	Used self-testing	Did Something Right Away	Revised Notes	Collaborated with others	Selected main ideas	N
Laura	API	F	Once, pre-exam only (crammed)							1
Jenny	API	F	More than once	To clarify lecture notes	Practice exams from textbook resource	Reviewed notes; typed notes.	Verbatim			5
Mona	Patho	C-	Once, pre exam only (Crammed)							1
Mary	Patho	C	More than once			Reviewed notes	Condensed after exam review	Attended test prep sessions and sought individual assistance of professor.	Highlighted areas to focus on in notes	5
Marie	API	C+	More than once	Read regularly to prep for lecture.	Quiz self, quizzed by others	Did Homework.		Studied with peers		5
Sheila	NCAC	B-	More than once	To clarify lecture notes						2
Joe	Patho	B	Once, but read textbook, too.	Read regularly						2
Doreen	API	A-	More than once		Quiz self, quizzed by others	Reviewed notes.	Condensed	Studied with peers		5

(table continues)

237

Pseudonym	Course	Grade	Reviewed Notes	Used Textbook	Used self-testing	Did Something Right Away	Revised Notes	Collaborated with others	Selected main ideas	N
Kay	API	A-	More than once		Flash/note cards for test prep	Typed notes.	Verbatim		Bold areas in typed notes; highlights notes while reviewing.	5
Martha	NCAC	A-	Once, but listened to audio-tapes during commute.	Read regularly and to clarify lecture notes; regularly						2
Kayla	Patho	A-	More than once		Pause and visualize notes in mind	Reviewed notes		Met with professor to clarify lecture notes; studied with peers before exam.		4
Mindy	Patho	A-	More than once	To clarify lecture notes	Flash/note cards for test prep					3
Misha	NCAC	A	More than once	Read regularly and to clarify lecture notes.	Flash/note cards for test prep		Condensed		Highlighted selections in textbook, created set of notes with highlighted information.	5

APPENDIX B: ASSIST

ASSIST

Approaches and Study Skills Inventory for Students
(Modified Version)

This questionnaire has been designed to allow you to describe, in a systematic way, how you go about learning and studying. The technique involves asking you a substantial number of questions, which overlap to some extent to provide good overall coverage of different ways of studying. Most of the items are based on comments made by other students. Please respond truthfully, so that your answers will **accurately** describe your **actual** ways of studying, and work your way through the questionnaire quite **quickly.** Please complete the questionnaire independently, without the assistance or comments from others.

The following information is necessary for data analysis. After additional information has been gathered from your academic records (ACT score, GPA, and your final grade for this course) this cover sheet will be destroyed, so there will be no way to connect your name with the survey and any academic data that you provide in this study.

Background information

Name: _____ Pick an identification number: _____

Age _____ years   Sex   M / F

Please check the Course for which you are taking this survey:

  [ ] NU160: Patho   [ ] NU161: Patho I   [ ] NU162: Patho II   [ ] NU210: Adult

  [ ] A & P I   [ ] A & P II

➤ Are you currently taking or have you taken AC105:College Transition? [ ] No [ ] Yes; if yes, to what extent have you changed the way you study for the course you checked above as a result of AC105: College Transition (check one):

  [ ] No change at all [ ] Changed a little [ ] Changed a great deal

➤ How many hours per week do you spend studying and preparing for this course? _____

➤ How many hours per week are you employed to support yourself financially? _____

Please continue to the next page to begin the survey.

Approaches to studying

For the following items, please indicate your relative agreement or disagreement with comments about studying; these comments have been made by other students. Please work through the comments, giving your **immediate** response. In deciding your answers, think in terms of **the particular course you checked on the previous page.** It is also very important that you answer **all** the questions.

5 means agree (√)   4 = agree somewhat (√?)   2 = disagree somewhat (x?)   1 = disagree (x).
Try not to use 3 = unsure (??), unless you really have to, or if it cannot apply to you or your course.

		√	√?	??	x?	x
1.	I manage to find conditions for studying which allow me to get on with my work easily.	5	4	3	2	1
2.	When working on an assignment, I'm keeping in mind how best to impress the grader.	5	4	3	2	1
3.	Often I find myself wondering whether the work I am doing here is really worthwhile.	5	4	3	2	1
4.	I usually set out to understand for myself the meaning of what we have to learn.	5	4	3	2	1
5.	I organize my study time carefully to make the best use of it.	5	4	3	2	1
6.	I find I have to concentrate on just memorizing a good deal of what I have to learn.	5	4	3	2	1
7.	I go over the work I've done carefully to check the reasoning and that it makes sense.	5	4	3	2	1
8.	Often I feel I'm drowning in the sheer amount of material we have to cope with.	5	4	3	2	1
9.	I look at the evidence carefully and try to reach my own conclusion about what I'm studying.	5	4	3	2	1
10.	It's important for me to feel that I'm doing as well as I really can on the courses here.	5	4	3	2	1
11.	I try to relate ideas I come across to those in other topics or other courses whenever possible.	5	4	3	2	1
12.	I tend to read very little beyond what is actually required to pass.	5	4	3	2	1
13.	Regularly I find myself thinking about ideas from lectures when I'm doing other things.	5	4	3	2	1
14.	I think I'm quite systematic and organized when it comes to studying for exams.	5	4	3	2	1
15.	I look carefully at instructors' comments on course work to see how to get higher grades.	5	4	3	2	1
16.	There's not much of the work here that I find interesting or relevant.	5	4	3	2	1
17.	When I read an article or book, I try to find out for myself exactly what the author means.	5	4	3	2	1
18.	I'm pretty good at getting down to work whenever I need to.	5	4	3	2	1

5 means agree (√)   4 = agree somewhat (√?)   2 = disagree somewhat (x?)   1 = disagree (x).
Try not to use 3 = unsure (??), unless you really have to, or if it cannot apply to you or your course.

		√	√?	??	x?	x
19.	Much of what I'm studying makes little sense: it's like unrelated bits and pieces.	5	4	3	2	1
20.	I think about what I want to get out of this course to keep my studying well focused.	5	4	3	2	1
21.	When I'm working on a new topic, I try to see in my own mind how all the ideas fit together.	5	4	3	2	1
22	I often worry about whether I'll ever be able to cope with the work properly.	5	4	3	2	1
23.	Often I find myself questioning things I hear in lectures or read in books.	5	4	3	2	1
24.	I feel that I'm doing well, and this helps me put more effort into the work.	5	4	3	2	1
25.	I concentrate on learning just those bits of information I have to know to pass.	5	4	3	2	1
26.	I find that studying academic topics can be quite exciting at times.	5	4	3	2	1
27.	I'm good at following up some of the reading suggested by professors or instructors.	5	4	3	2	1
28.	I keep in mind who is going to grade an assignment and what they're likely to be looking for.	5	4	3	2	1
29.	When I look back, I sometimes wonder why I ever decided to come here.	5	4	3	2	1
30.	When I am reading, I stop from time to time to reflect on what I am trying to learn from it.	5	4	3	2	1
31.	I work steadily through the term or semester, rather than leave it all until the last minute.	5	4	3	2	1
32.	I'm not really sure what's important in lectures so I try to get down all I can.	5	4	3	2	1
33.	Ideas in course books or articles often set me off on long chains of thought of my own.	5	4	3	2	1
34.	Before starting work on an assignment or exam question, I think first how best to tackle it.	5	4	3	2	1
35.	I often seem to panic if I get behind with my work.	5	4	3	2	1
36.	When I read, I examine the details carefully to see how they fit in with what's being said.	5	4	3	2	1
37.	I put a lot of effort into studying because I'm determined to do well.	5	4	3	2	1
38.	I gear my studying closely to just what seems to be required for assignments and exams.	5	4	3	2	1

Continue on to the next page to complete the Survey...

5 means agree (√)   4 = agree somewhat (√?)   2 = disagree somewhat (x?)   1 = disagree (x).
Try not to use 3 = unsure (??), unless you really have to, or if it cannot apply to you or your course.

		√	√?	??	x?	x
39.	Some of the ideas I come across on the course I find really gripping.	5	4	3	2	1
40.	I usually plan out my week's work in advance, either on paper or in my head.	5	4	3	2	1
41.	I keep an eye open for what lecturers seem to think is important and concentrate on that.	5	4	3	2	1
42.	I'm not really interested in this course, but I have to take it for other reasons.	5	4	3	2	1
43.	Before tackling a problem or assignment, I first try to work out what lies behind it.	5	4	3	2	1
44.	I generally make good use of my time during the day.	5	4	3	2	1
45.	I often have trouble in making sense of the things I have to remember.	5	4	3	2	1
46.	I like to play around with ideas of my own even if they don't get me very far.	5	4	3	2	1
47.	When I finish a piece of work, I check it through to see if it really meets the requirements.	5	4	3	2	1
48.	Often I lie awake worrying about work I think I won't be able to do.	5	4	3	2	1
49.	It's important for me to be able to follow the argument, or to see the reason behind things.	5	4	3	2	1
50.	I don't find it at all difficult to motivate myself.	5	4	3	2	1
51.	I like to be told precisely what to do in essays or other assignments.	5	4	3	2	1
52.	I sometimes get 'hooked' on academic topics and feel I would like to keep on studying them.	5	4	3	2	1

Please continue to the next page to complete the survey...

Preferences for different types of courses and teaching

For the following items, please indicate your relative preference for types of courses and approaches to teaching. It is very important that you answer **all** the questions.

5 means definitely like (√)   4 = like to some extent (√?)   2 = dislike to some extent (x?)   1 =
definitely dislike (x).
Try __not__ to use 3 = unsure (??), unless you really have to, or if it cannot apply to you or your course.

		√	√?	??	x?	x
a.	Instructors who tell U.S. exactly what to put down in our notes.	5	4	3	2	1
b.	Instructors who encourage U.S. to think for ourselves and show U.S. how they themselves think	5	4	3	2	1
c.	exams, which allow me to show that I've thought about the course material for myself.	5	4	3	2	1
d.	exams or tests which need only the material provided in our lecture notes.	5	4	3	2	1
e.	courses in which it's made very clear just which books we have to read.	5	4	3	2	1
f.	courses where we're encouraged to read around the subject a lot for ourselves.	5	4	3	2	1
g.	books which challenge you and provide explanations which go beyond the lectures.	5	4	3	2	1
h.	books which give you definite facts and information which can easily be learned.	5	4	3	2	1

Finally, how well do you think you have been doing in your graded work overall, so far?

*On the scale below, **where 10 means very well and 1 means rather badly**, circle the number that represents how you have been doing in the course based on the grades you have been obtaining this semester:*

    10   9   8   7   6   5   4   3   2   1

Thank you very much for completing this survey. Your comments are welcome.