Learning strategies of Bible college freshmen : a case study of Prairie Bible College
by Lynn Heasty Wallace

A thesis submitted in partial fulfillment of the requirements for the degree of Doctor of Education
Montana State University
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Abstract:
The impact of selected demographic characteristics and use of 10 learning strategies upon first semester GPA was examined among 122 freshmen at Prairie Bible College (PBC) in Three Hills, Alberta. This descriptive case study found that the freshmen tended to fall on a continuum. At one extreme was the young, single female who was raised in a stable home with Christian parents and who was uncertain as to her future plans. At the other end of the continuum was the older, married male whose parents may or may not be Christians and who was planning to enter full-time Christian service. The freshmen at either end of this continuum were very likely to have higher GPAs than those whose demographic characteristics placed them in the middle. Weinstein's Learning and Study Strategies Inventory (LASSI) was used to measure learning strategies among the freshmen. When compared to the freshmen at two American universities, the PBC freshmen were found to be somewhat less proficient than freshmen at a high-selectivity university and somewhat more proficient than freshmen at a low-selectivity university. The academically successful PBC freshmen made more frequent use of all 10 learning strategies than the less successful freshmen. Through the use of discriminant analysis, it was possible to classify the freshmen into two groups representing the academically highest and lowest 15.6% of the class with over 97% accuracy.

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APPROVAL

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Lynn Heasty Wallace

This thesis has been read by each member of the graduate committee and has been found to be satisfactory regarding content, English usage, format, citations, bibliographic style, and consistency, and is ready for submission to the College of Graduate Studies.

4/27/94
Date

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5/9/94
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ABSTRACT

The impact of selected demographic characteristics and use of 10 learning strategies upon first semester GPA was examined among 122 freshmen at Prairie Bible College (PBC) in Three Hills, Alberta. This descriptive case study found that the freshmen tended to fall on a continuum. At one extreme was the young, single female who was raised in a stable home with Christian parents and who was uncertain as to her future plans. At the other end of the continuum was the older, married male whose parents may or may not be Christians and who was planning to enter full-time Christian service. The freshmen at either end of this continuum were very likely to have higher GPAs than those whose demographic characteristics placed them in the middle. Weinstein's Learning and Study Strategies Inventory (LASSI) was used to measure learning strategies among the freshmen. When compared to the freshmen at two American universities, the PBC freshmen were found to be somewhat less proficient than freshmen at a high-selectivity university and somewhat more proficient than freshmen at a low-selectivity university. The academically successful PBC freshmen made more frequent use of all 10 learning strategies than the less successful freshmen. Through the use of discriminant analysis, it was possible to classify the freshmen into two groups representing the academically highest and lowest 15.6% of the class with over 97% accuracy.

CHAPTER 1

INTRODUCTION

Bible colleges are small, privately-funded, Christian colleges which prepare students for Christian ministry. Their primary goals are to teach students to perform an accurate and in-depth study of the Bible and to apply Biblical principles to real issues in the students' lives. They typically stress a disciplined lifestyle in order to promote personal and academic integrity.

Over 30,000 students attend accredited Bible colleges in North America each year (American Association of Bible Colleges [AABC] Annual Report Data, 1992). Students who attend these schools are often drawn to them for their small size and caring atmosphere in addition to the academic programs available. The average student to faculty ratio is 15:1 (AABC Statistical Report, 1992). Because of a strong belief in both the value of Bible study and the future ministries of their students, it is logical that Bible college faculty and administrators desire their students to learn as effectively as possible.

One area that holds promise for helping students learn more effectively is that of learning strategies. The concept of learning strategies developed as researchers in

the relatively new field of cognitive psychology began to examine traditional study skills. A learning strategy is simply a plan or device used to help accomplish learning. It may be an external, observable skill such as the underlining or annotating of text while reading. A learning strategy may also be an internal, unobservable skill such as the ability to effectively plan a study schedule or to control test anxiety.

Just as the learning and teaching requirements of public colleges and universities have resulted in a need for information on learning strategies, so a need exists in Bible colleges. Indeed, since Bible colleges are smaller schools with more limited funding than public schools, there is strong incentive for maximum efficiency in teaching and learning.

Problem Statement

The vast majority of research on the learning and study strategies of college students has been conducted on students in public colleges and universities, often on freshmen with known or predicted academic difficulties (Confer-Owens, 1992; Ickes & Fraas, 1990; McKeachie, Pintrich, & Lin, 1985; Nist, 1987, 1989; Weinstein, 1980a, 1980b). It is possible that the differences in setting and size (large public colleges and universities versus small private Christian colleges) as well as the differences in

population (students with known or predicted academic difficulties versus regularly admitted students), may make the results of these studies inapplicable to Bible college students. Although research using Bible college students is sparse, that which does exist indicates several important demographic and attitudinal differences between Bible college students and students in public four-year colleges (Brown, 1982; Bosma & O'Rear, 1981; Shaver, 1987). For example, the majority of Bible college freshmen are over 18 years old and tend to share not only similar values but also similar vocational goals. Most were raised in rural areas by Christian parents and plan on entering some type of full-time Christian service. The primary personal objectives of Bible college freshmen are to help others and raise a family. Less than 17% of them rank having business success or being financially well off as being very important personal objectives (Brown, 1982).

No major studies have been published that deal directly with the use of learning or study strategies among Bible college students. If Bible college students differ from public college students in their use of learning strategies and study skills then the results and recommendations from studies done at public colleges must be used with extreme caution. New research must be conducted to determine where the differences exist as well as why they exist. For example, if students are using

different strategies, then which strategies are being used?
Are the different strengths and weaknesses systematically
affecting academic performance? In what ways might the
distinctive characteristics of Bible college freshmen such
as declared major, intent on full-time Christian service,
or years of home schooling influence the choice or
effectiveness of these learning strategies?

On the other hand, if Bible college students do not
differ from public college or university undergraduates,
then Bible college faculty and administrators will be able
to make confident use of an abundance of existing and
ongoing research on learning strategies in order to help
their students become more efficient learners. With this
information as a baseline for incoming freshmen, additional
research will be needed to determine the relationships
between strategy use and academic success. Are the
academically successful Bible college freshmen using
different learning strategies than the academically
unsuccessful freshmen?

To identify relationships between learning strategies,
certain demographic factors, and academic success may
provide Bible college faculty and administrators with
information which could be used to guide students toward
the most appropriate and effective learning strategies.
Use of efficient and productive learning strategies should

allow students to receive maximum academic benefit from their college experience.

Statement of Purpose

The purpose of this study was to describe the learning strategies of college freshmen at Prairie Bible College and to determine which strategies and demographic characteristics were related to academic success. Learning strategies were measured by using Weinstein's <u>Learning and Study Strategies Inventory</u> (LASSI). This 77 item self-response questionnaire yields scale scores on 10 learning strategies. The first five are affective strategies: attitude, motivation, time management, anxiety and concentration. The remaining five are cognitive strategies: information processing, selecting main ideas, study aids, self-testing and test strategies. The demographic characteristics were examined by using a 23 item self-response questionnaire. The characteristics were chosen based on their known or theorized correlation to academic performance and included items such as age, gender, declared major, type of high school attended, or years of homeschooling.

<u>Setting</u>

The study took place at Prairie Bible College, Three Hills, Alberta, during the 1993-1994 school year. Prairie Bible College is one division of Prairie Bible Institute, an organization consisting of an elementary school, a junior high school, a high school, a college offering both two and four-year degrees, and a graduate school. Established in 1922, the Institute has an alumni of just over 12,000. The 130 acre campus is located in a rural farming community of about 3,400 people and is 80 miles northeast of Calgary--a city of over 625,000 people. The Institute is interdenominational (not officially supported by any single denomination) though it aligns itself theologically with Protestant evangelicalism by adhering to doctrines such as the inspiration and inerrancy of the Scriptures and the vicarious death of Christ and His bodily resurrection. Over 40 denominations are represented in the student body including Alliance, Anglican, Baptist, Brethren, Evangelical Free, Lutheran, Mennonite, Methodist, Nazarene, Pentecostal and Presbyterian. Tuition, room and board for a single dorm student, and miscellaneous school fees totaled approximately $6,000 for the 1993-94 school year (Prairie Bible College Catalogue, 1991-1993). Fall 1993 enrollment in the college was 434 with 150 first term freshmen. Fourteen percent of the 1993-94 student body

came from countries other than Canada or the United States with 26 different countries represented (Doug Lewis, PBC registrar, personal communication, February 8, 1994).

Research Questions

1. What are the demographic characteristics of the freshmen at Prairie Bible College?

2. Do these freshmen differ from the norms established for other college freshmen in their use of learning strategies?

3. To what degree are different types of learning strategies used by the successful students?

4. To what degree are different types of learning strategies used by the unsuccessful students?

5. To what degree does the use of learning strategies affect academic success as measured by grade-point average (GPA)?

6. To what degree are select demographic factors related to GPA?

7. Is there a correlation between the demographic factors and the choice of learning strategies? That is, are certain types of students more likely to use certain learning strategies?

8. Can demographic factors, learning strategies, or a combination of the two discriminate between the most academically successful and the least successful students?

Definition of Terms

American Association of Bible Colleges (AABC): The
federally recognized accrediting agency for Bible
colleges in the United States and Canada.

Bible colleges: Undergraduate theological institutions.
In this study, the data reported are representative of
Bible colleges accredited by the American Association
of Bible Colleges or members of the Association of
Canadian Bible Colleges.

Christian: A follower of the teachings of Christ. For
this study, Christian refers to those students who
declared themselves as such on the demographic survey
(See Appendix A, Question 82).

Full-time Christian service (FTCS): A primary,
professional vocation in a church or church-related
organization. Typically represented by pastors and
missionaries, FTCS can also include pilots, teachers,
doctors, secretaries, and administrators in Christian
hospitals, schools, churches, missions, and relief
organizations.

Grade point average (GPA): A single numerical average
representing the academic achievement of a student for
all classes taken in a semester. In this study a 4-
point scale was used with 4.0 representing the highest
possible level of academic achievement.

Homeschool: A program of formal education that occurs in a

home rather than a traditional school environment. In

this study, students were classified as homeschooled

if they declared themselves as such on the demographic

survey (See Appendix A, Question 96).

LASSI: The self-report instrument used to measure learning

strategies in this study. It is the abbreviation for

the <u>Learning and Study Strategies Inventory</u> developed

by Weinstein.

Learning strategies: The "active, deliberate, and

teachable methods of processing information"

(Weinstein & Mayer, 1986, p. 257).

Limitations and Delimitations

The scope of this study was limited in the following

ways:

1. The sample was limited to the type of student

attracted to Prairie Bible College during the 1993-1994

school year.

2. Academic success was measured by using the first

semester cumulative grade point average of the freshmen.

3. Learning strategies were limited to the five

affective and five cognitive strategies measured by

Weinstein's "Learning and Study Strategies Instrument"

(LASSI).

The following delimitations exist:

1. This research was a case study of the learning strategies of first term freshmen taking at least six credits at Prairie Bible College; therefore, the population consists of the freshman class at one Bible college in western Canada. Although Prairie Bible College is representative of inter-denominational North American Bible colleges, the design of this study does not support generalizability to other colleges.

2. The data were collected using self-response surveys of demographic characteristics and learning strategies so the accuracy of the results depends upon the honesty of the responses. The students were clearly instructed to respond to the learning strategy questionnaire by rating themselves according to how well the statements actually described them and not in terms of how the students thought they should be or would like to be. In addition, the students were assured of anonymity. These two factors should have increased the accuracy of the responses, but results of this study should be interpreted with this delimitation in mind.

CHAPTER 2

REVIEW OF RELEVANT RESEARCH

Learning Strategies

History

F. Galton once stated that "until the phenomena of any branch of knowledge have been submitted to measurement and number it cannot assume the dignity of a science" (cited in Misiak, 1966, p. 57). Psychology attempted to attain "the dignity of a science" by the use of measurement and quantification, and its success in this regard did produce progress; it also influenced that progress (Misiak, 1966).

When John B. Watson published Behavior--An Introduction to Comparative Psychology (1914) and Psychology from the Standpoint of a Behaviorist (1919), he became the acknowledged leader of behaviorism. Watson was resolute in his belief that psychology should be a science of behavior and not a study of mental activity. Understanding humans could come only through careful, measured observation of their behavior and not by exploring inner (and unobservable) workings of the mind and the emotions. Other behaviorists expanded upon the work of Watson as they attempted to explain, control, and predict

complex human behaviors. Although these behaviorists differed in their areas of research, they all attempted to explain behavior in terms of the connection between stimuli and observable responses.

This mechanistic and often fragmented approach to human behavior was challenged by the introduction of Gestalt psychology in the 1930s. Gestalt theorists looked at the whole rather than parts because they believed that the whole was something different from merely the sum of the parts. They also felt that complex behavior could not be explained in the reductionist terms of stimulus-response bonds. They began with experimental studies of perception using a stroboscope. Finding evidence to support their theories, they subsequently studied memory, thinking, and motivation. These Gestalt psychologists broadened the investigation of learning to include understanding, insight, and problem-solving (Elias & Merriam, 1980). In the early 1970s, behaviorists began to adopt cognitive positions. Environmental engineering was not effecting the desired changes in their clients. In addition, laboratory studies were evidencing the role of cognitions such as awareness and expectancy (Matheny & Kern, 1984).

Cognitive theorists attempted to understand how people acquire knowledge, how they form concepts, how they "think." Many of their findings have a direct application to the field of learning strategies (Darkenwald, 1982).

Development of Learning Strategies

Cognitivists were especially interested in the mental processes of knowledge acquisition and concept formation. Learning was viewed as "an active process that occurs within the learner and which can be influenced by the learner" (Weinstein & Mayer, 1986, p. 316). Since some people seemed to process information more efficiently than others, cognitivists attempted to measure what happens inside the learner's mind while learning is occurring. Traditional "study skills" such as taking good notes, underlining main ideas while reading, and creating logical outlines provided a starting point for these researchers to measure and evaluate how people were learning. As research continued, however, deeper questions appeared: How does an "efficient learner" decide when (or when not) to use certain study skills? What role does previous content knowledge play in the use of study skills? Is recall of information affected by the method of learning? From questions such as these, the concept of "learning strategies" emerged. On the surface, some strategies are quite similar to study skills, but they allow researchers to gather a different type of information and to test deeper hypotheses regarding why some people appear to learn more efficiently than others.

Learning strategies differ from learning styles in that "styles are believed to be more stable (trait-like)

preferences or predispositions to process information in specific ways, whereas strategies are active, deliberate, and teachable methods of processing information" (Weinstein & MacDonald, 1986, p. 257). Researchers in the field of cognitive psychology have not yet agreed upon a precise definition of learning strategies. Some use the terms study skills and learning strategies almost interchangeably (Entwistle, 1982; Palmer & Goetz, 1988). Tobias (1982) divides learning strategies into macroprocesses such as comprehension monitoring, active reading, or note-taking and the microprocesses of intelligence and general thinking skills. Dansereau (1983) basically reverses these two categories with his division of learning strategies into primary and support strategies. The primary strategies such as memory or comprehension strategies are those that are used to process information. Support strategies such as attention or concentration are used to maintain the proper state of mind for learning. McKeachie, Pintrich, and Lin (1985) consider learning strategies to be primarily the global, complex strategies such as elaboration, comprehension monitoring, and active reading though they also include motivational strategies, affective strategies, as well as basic memory strategies such as rehearsal and imagery. Conti and Fellenz (1991) describe learning strategies as "the techniques or skills that an individual

elects to use in order to accomplish a specific learning task" (p. vii).

The learning strategies instrument used in this study to gather information on Bible college freshmen was developed by Weinstein (1987). She categorizes learning strategies into the following four dimensions:

1. Comprehension Monitoring. Weinstein (1990) describes this as "knowing when you know, knowing when you don't know, and knowing what to do about it." (p. 18) For example, if you are reading this paper and your mind wanders, your eyes may still keep moving until something inside of you says "I don't know what I'm reading." So you stop, go back to something you recognize and then re-read. This is comprehension monitoring. Comprehension monitoring also includes being able to "establish learning goals for an instructional unit or activity, to assess the degree to which these goals are being met, and, if necessary, to modify the strategies being used to meet the goals" (Weinstein & Mayer, 1986, p. 323).

2. Knowledge Acquisition. This refers to the building of relationships between what you already know and what you are trying to learn. It includes "those methods needed to organize and elaborate incoming information to make it more meaningful" (Weinstein & MacDonald, 1986, p. 258). An example of this is Berne's personality labels.

He used the analogy of adult, parent, and child because
people already understood those concepts clearly.

3. Active Study Strategies. This is putting active
information constructs into study skills. For example, as
a study skill, note taking was basically taught as a device
which would help students remember important information.
As a learning strategy, note taking is used to help
students learn the process of deciding what the main ideas
are, thinking about the relationships between the main
ideas, and considering what is important and why.

4. Support Strategies. Support strategies "help to
generate and maintain climates for learning . . . [they]
deal with what are often called affective variables . . .
such as motivation, attention, concentration" (Weinstein,
1990, p. 19). Support strategies can be external such as a
quiet place to study with proper lighting or internal such
as being able to focus attention or deal with anxiety.

Due in part to the wide variety of definitions,
research on learning strategies has been quite diverse and
the results have been occasionally contradictory.
Following are several of the results that seem to be fairly
consistent throughout the literature.

Choice of Learning Strategies. The choice of learning
strategies varies with age, ability, and expertise. Older
and younger children use different strategies. For

example, when given the task of recalling a list of
numbers, kindergartners used repeated rehearsal as a
strategy only 24% of the time. This compared to first
graders using repeated rehearsal 63% of the time and to
third graders increasing to 78% of the time (McGilly &
Siegler, 1989, 1990).

Among 6 year olds, the choice between using retrieval
or other back-up strategies for math and reading was
influenced by both academic ability and a level of
confidence in retrieval accuracy. For example, both the
"good" students and the "not-so-good" students used
retrieval more often than the "perfectionists." Even
though the perfectionists were more accurate in using
retrieval than the other two groups, these children
appeared to set a higher criteria of accuracy before they
would use retrieval as a strategy (Siegler, 1988).

Comparisons of good and poor readers have consistently
shown that poor readers engage in less comprehension
monitoring (Kaufman & Randlett, 1983; Paris & Myers,
1981). People with high spatial abilities use different
problem-solving strategies than people with low spatial
abilities (Cooper & Regan, 1982; Sternberg & Weil,
1980).

Experts and novices of similar ages use profoundly
different problem-solving strategies (Chi, Feltovich, &
Glaser, 1981). The effectiveness of teacher-generated

knowledge maps is influenced by the students' levels of expertise. Students with low prior knowledge learned most when lectures were accompanied by knowledge maps and learned least in lectures accompanied by lists of key terms. For students with high prior knowledge, the opposite was true. These students learned most when lectures were accompanied by lists of key terms and learned least when knowledge maps were used (Lambiotte & Dansereau, 1992).

Active Learning Strategies. Students taught to use active learning strategies showed improved performance in recognition and recall of material. College students who were asked to underline sentences in a passage were able to recall substantially more information than students who simply read the passage without underlining (Rickards & August, 1975). However, students focus on and remember whatever is marked whether it is important or not. Therefore, students who are not able to select concepts of high relevance perform better if they are given text with the high-level material already marked (Nist & Hogrebe, 1987).

Students taught to classify passages into five structured categories showed substantial pre- to post-test gains in the recall of high-level material in unfamiliar biology and physics textbooks (Cook, 1982). Students

taught to make their own knowledge maps (a spatial learning strategy) showed significant improvement on both recognition and recall tests (McCagg & Dansereau, 1991). On essay content, essay organization, outline content, and short-answer questions, students taught to generate their own text headings scored significantly higher than those who used author-generated text headings and those without text headings (Dansereau, 1982). Rehearsal strategies that are effective for basic learning tasks may not be as useful for complex tasks (Weinstein & Mayer, 1986). Significant improvement in comprehension can be achieved when students are instructed in comprehension monitoring, and the results seem to be stable over time (Bommarito & Meichenbaum, 1978).

Learning Strategy Courses. College courses in learning strategies do produce significant improvement in reading comprehension, academic performance, and stress reduction for regularly admitted students (Dansereau, 1983; Weinstein, 1982). Unfortunately, these results are not consistent among the at-risk freshmen who are often required to take this type of course. At the Nashville State Technical Institute, 92 underprepared freshmen were divided into two groups in order to compare two types of study skills courses. The LASSI was used as a pre- and post-test measure. Neither approach made a significant

improvement among any of the 10 learning strategies measured by the LASSI (Confer-Owens, 1992). At a small liberal arts university, 59 academically at-risk freshmen took a required study skills course where the LASSI was again used as a pre- and post-test measure. These students did show significant improvement on half of the LASSI scales (Anxiety Management, Concentration, Information Processing, Self-Testing, Use of Study Aids); however, these gains had little impact on the students' academic performance as measured by first and second semester GPA (Ickes & Fraas, 1990). As far back as 1960, Entwistle observed that "volunteers seem to do better" than those who are mandated to take the course, and this would still appear to be true today.

The good news is found in the positive results among the regularly admitted students. Weinstein reported that students who took the "Learning to Learn" class at the University of Texas in Austin not only acquired the study skills and learning strategies that significantly improved their academic performance but also that they appeared to gain self-confidence and to feel better about themselves as learners (Weinstein, 1988/89).

Bible Colleges

Bible schools may be named Bible colleges, Bible schools, Bible institutes, or training institutes, but

there is no fundamental difference in their purpose. The
American Association of Bible Colleges (AABC) includes
schools with all of these names and defines them as post-
secondary educational institutions "whose distinctive
function is to prepare students for Christian ministries or
church vocation through a program of Biblical, general, and
professional studies" (American Association of Bible
Colleges Manual, 1993, p. 9.). They are Bible-centered and
conservative in theology. They stress Christian service,
the devotional life of the students, and the world mission
of the church. One feature which may distinguish Bible
colleges from Bible institutes, Bible schools, and training
institutes is the length of program resulting in the
ability to grant bachelor degrees. Bible colleges
typically offer four-year programs which include 32-64
semester hours of liberal arts courses. Bible institutes/
Bible schools/training institutes may have similar
programs, but normally they only require 16-32 semester
hours of liberal arts courses and grant 1-, 2-, or 3-year
diplomas (Witmer, 1962). Since the purpose of Bible
schools is to prepare students for Christian vocations, the
types of bachelor degrees offered are limited. The primary
difference between Bible colleges and Christian liberal
arts colleges is that the latter offer degrees in a much
broader range of subjects. Bible schools are similar to
theological seminaries in that both are "professional,

single-purpose institutions with a heavy concentration in biblical and theological studies. Bible colleges offer a wider range of vocational training programs than do most seminaries, which tend to emphasize training for the pastorate" (Witmer, 1962, cited in Kallgren, 1988, pp. 32, 33). While seminaries are typically graduate level institutions and Bible colleges are generally undergraduate institutions, many Bible colleges are beginning to offer a limited number of specialized graduate programs such as Ethnomusicology or Urban Missions. Bible schools are often associated with a denomination though approximately one-third of the schools accredited by the AABC are independent and interdenominational (American Association of Bible Colleges Manual, 1993).

History

While every Bible school has its own special origin, the typical scenario seems to be as follows. A group of people request evening Bible courses. The classes are taught by a local pastor and meet in Sunday School rooms until the classes grow in size and number beyond the capabilities of the church staff and building. A building is acquired (usually quite modest), a full-time teacher is hired, and additional day classes are offered. At this time, the program becomes known as a Bible School, Bible Institute, or Training Institute. Some schools remain at

this stage, deciding not to "dilute" their programs with additional general education courses. They offer certificates and diplomas in Bible-intense programs and expect their graduates to go on to other schools if additional education is necessary. Some schools decide that general education courses would enhance their existing programs, and they add only those liberal arts courses which are necessary for their programs. These schools are renamed Bible colleges and offer bachelor degrees in five principle areas: Pastoral/Theology, Missions, Christian Education, Church Music, and General Bible.

The Bible school movement as a whole began in the 1880's in response to the realization that seminaries would not be able to provide sufficient numbers of clergy to deal with the challenge of world evangelization. The movement "was less a reaction against the seminaries than a mobilization of laypeople to reach the lost" (Kallgren, 1991, p. 27). In 1882, A. B. Simpson started the Missionary Training Institute--known today as Nyack College. This school was modeled after the East London Institute for Home and Foreign Missions and came about because of Simpson's deep concern for world missions. September of 1889 marked the opening of the Bible Institute of the Chicago Evangelization Society--known today as Moody Bible Institute. In 1890, Moody told a newspaper reporter:

> There is a class of people whom no man can reach
> successfully except one of their own number . . .
> There is far more demand for trained lay workers
> than is commonly apprehended . . . I am not
> seeking to make any shortcut to the ministry. I
> do not consider this work to be in conflict with
> the work of the theological seminaries. (cited in
> Pollock, 1963, p. 269)

Today Moody Bible Institute is the largest Protestant

missionary training school in the world and in 1962,

twenty-seven hundred of its alumni were active

missionaries. These two pioneer schools, Nyack College and

Moody Bible Institute, not only initiated the movement in

America, they also served as prototypes and inspiration for

many schools to follow (see Table 1) (Witmer, 1962, p. 34).

By 1992 there were 89 Bible schools accredited by the

American Association of Bible Colleges (AABC) with 17

others at either candidate or applicant status (American

Association of Bible Colleges Manual, 1993).

Table 1.   Founding of Bible Institutes and Colleges by
           Decades.

Decade	USA	Canada	Total
1881-1890	3	0	3
1891-1900	7	1	8
1901-1910	9	0	9
1911-1920	13	2	15
1921-1930	17	9	26
1931-1940	26	19	45
1941-1950	66	16	82
1951-1960	40	4	44
1961-1970	16	2	18

Note.   From The Bible college in American higher education
(p. 60) by L.J. Eagen, 1981, Fayetteville, AR: American
Association of Bible Colleges. Copyright 1970 by the
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Bible College Students

Bible College Freshmen

Bible colleges attract a remarkably homogeneous body of students, probably the most homogeneous group of freshmen in all of higher education.

> It is likely that the homogeneity among Bible colleges--while certainly owing in part to their similarity in size and religious emphasis--can be explained by the fact that they attempt to serve students who are attracted by the same vocation. Consequently, the students have more in common than similar religious beliefs and personal convictions; they also share a common interest in some kind of church work. (Kallgren, 1988, p. 42)

Academic Characteristics. Most Bible colleges do not have academic entrance requirements such as SAT/ACT scores or a minimum high school grade point average. The 1989 AABC freshman survey found that 72% of the freshmen ranked in the top half of their high school graduating class with 49% from the top quarter and 22% in the top 10%. In 1981, Brown compared both high school rank and high school grades and found that Bible colleges attract a fairly representative cross section of students from all academic levels (Table 2). Bible college freshmen ranked higher than the low selectivity institutions and lower than the medium selectivity institutions. Low selectivity institutions are distinguished from medium selectivity institutions based on the minimum SAT/ACT scores required for entrance. Astin classifies medium selectivity colleges

as those which require an SAT score of at least 1025 or an

ACT score of at least 23 (1992, p. 94).

Table 2. Academic Comparison of Bible Colleges with Other
Types of Four-Year Colleges (by percentage of the
freshman class).

Item Response	Public Low Select.	Non-Sect. Low Select.	Protestant		All 4-Year Coll.	Bible Coll.
			Low Select.	Medium Select.		
Academic Rank in HS						
Top 20%	31.5	33.5	40.2	47.7	42.8	41.0
Second 20%	25.7	23.4	21.7	22.6	24.1	21.9
HS Grades of B+ or Higher						
	30.0	32.0	39.3	46.8	43.0	42.4

Spiritual Characteristics. Whereas most Bible

colleges have very few academic entrance requirements, they

tend to have fairly rigid spiritual entrance requirements.

According to Dr. L. John Eagen (1981), President of St.

Paul Bible College:

> Every catalog of every Bible college contains
> statements of expected student behavior and the
> college's desire to foster a Biblically
> consistent life-style. Before being considered
> for admission, students must give evidence of a
> personal relationship with Jesus Christ and
> commitment of service to Him, usually
> accomplished by a letter or recommendation from a
> minister. (p. 50)

Some Bible colleges further limit admission to students

intending to enter Christian ministry (Witmer, 1962).

Demographic Characteristics. The Bible college

freshman class resembles the freshman class at other

four-year colleges in gender ratio but differs

significantly on the demographic variables of ethnicity,

age, and economic status. Both groups have slightly more

freshman females than males. The ratio at Bible colleges is

51.0 to 49.0 (Bell, 1989); at other four-year colleges it

is 53.8 to 46.2 (Astin, 1989). Whereas both groups are

predominantly caucasian, the percentage of caucasian Bible

college freshmen is 90.0, much higher than the 81.6% at

other four-year colleges. Bible college freshmen tend to

be older than freshmen at other four-year colleges

(Figure 1). While almost the entire freshman class at

other four-year colleges is comprised of students aged

17-20 (98.7%), this same age span accounts for only 77.7%

of a Bible college freshman class. In addition, more than

one half of the Bible college freshmen are over the

traditional age of 18 (Astin, 1989; Bell, 1989).

Figure 1. Age of Freshmen.

(% of all respondents; ≣ =Bible colleges, ⦂ =other four-year colleges)

17-18   46.8
          75.9

19-20   30.9
      22.8

21-24   9.4
     0.8

25-29   5.3
     0.3

30 up   7.2
     0.3
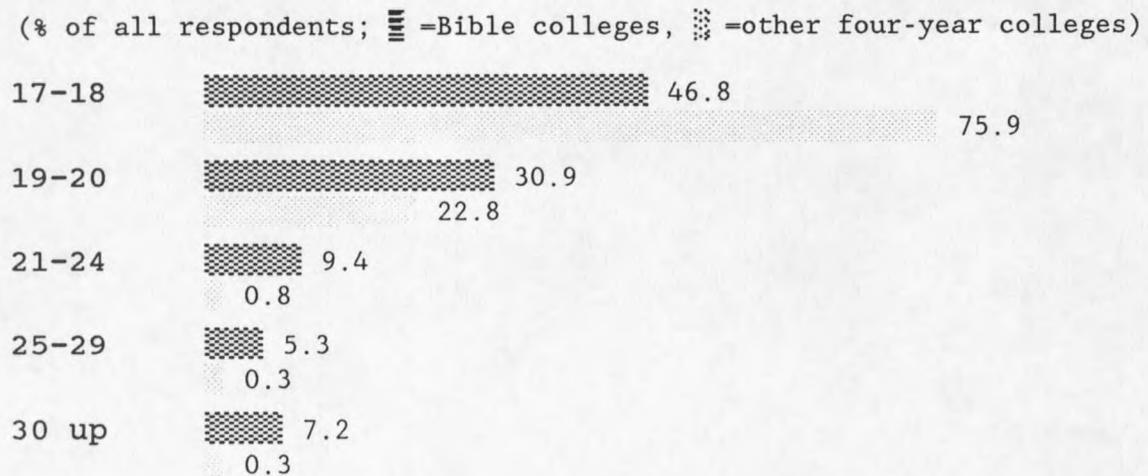
The increased proportion of married freshmen in Bible colleges is most likely a result of the increased age levels. In 1989, 10.3% of the Bible college freshmen were married (Bell, 1989). By 1989, marital status was no longer included in the Astin survey. The final year it was included was 1986, and at that time only 0.7% of the freshmen at other four-year colleges were married (Astin, 1986).

The socioeconomic status of Bible college freshmen is somewhat lower than other freshmen when measured by the two factors of estimated parental income and the father's educational level. Half of the 1981 Bible college freshmen estimated their parental income to be under $20,000 as compared to a third of the other 1981 four-year college freshmen (Figure 2). About a third (32.1%) of the Bible college freshmen have fathers with college degrees as compared with 39% of the freshmen at other four-year colleges (Brown, 1982; Astin 1981).

Figure 2. Estimated Parental Income.

(% of all respondents; ☰ =Bible colleges, ⋮⋮ =other four-year colleges)

Under 20,000   ▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓ 49.5
                             33.6

20,000-29,999   ▓▓▓▓▓▓▓▓ 26.3
                      26.2

over 30,000   ▓▓▓▓▓▓ 24.2
                        40.2
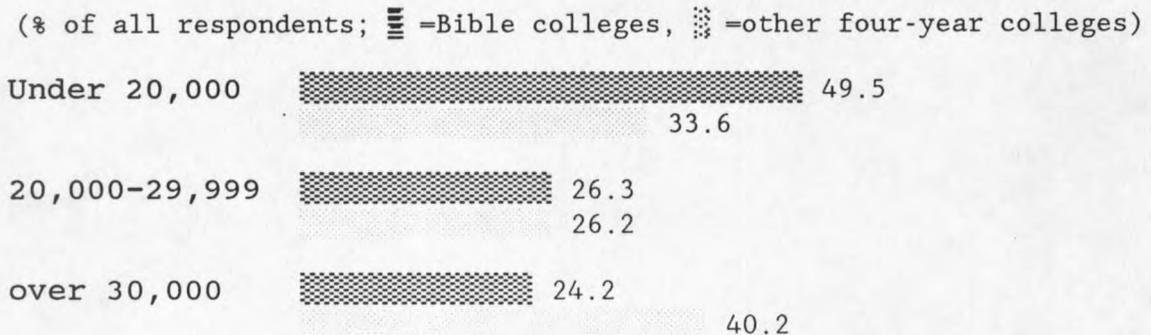
Objectives and Expectations. Bible college freshmen
have a strong sense of direction in their choice of
college. Over four-fifths (81.6%) listed the school they
attend as their first choice with most (73%) not applying
to any other college (Bell, 1989; Brown, 1982). This
compares to 67.4% of the freshmen in other four-year
colleges listing the school they attend as their first
choice and only 38% not applying to other schools (Astin,
1989; Brown, 1982). Over a third (35.7%) of the Bible
college freshmen traveled more than 500 miles to attend
school compared to about an eighth (13.5%) of the students
at other four-year colleges (Astin, 1989; Bell, 1989).
Expected satisfaction with the chosen college is higher
among the Bible college freshmen; over two-thirds (68.3%)
expect to be satisfied with their college compared to 55.8%
of those from other four-year colleges (Brown, 1982).

When asked to rate their reasons for attending
college, clear differences between the two groups of
freshmen emerged on the following four statements (Table 3)
(Brown, 1982). To the 53% of the Bible college freshman
class who already plan on a career in full-time Christian
service (Bell, 1989), issues such as getting a "better job"
or making "lots" of money are understandably unimportant.
However, even of the remaining 47% whose future plans are
still undecided, most did not feel these issues were very
important in their own decision to attend college.

Table 3.   Reasons Rated as "Very Important" for College
           Attendance (by percentage of freshman class).

Item Response	Bible Colleges	4-Year Colleges
To prepare for grad school	26.6	45.4
To get a better job	21.3	76.3
To become more cultured	18.9	33.5
To make lots of money	8.7	67.0

The personal objectives of Bible college freshmen also
differ from other college freshmen, and these differences
are consistent with other data on these two groups of
freshmen (Table 4) (Brown 1982).

Table 4.   Personal Objectives Rated as "Essential" or "Very
           Important" (by percentage of freshman class).

Public Item Response	Non-Sect. Low Select.	Protestant Low Select.	Protestant Low Select.	All Medium Select.	4-Year Coll.	Bible Coll.
Help others	65.1	63.8	73.4	69.1	62.9	89.3
Raise a family	65.7	66.4	73.2	71.8	66.5	85.0
Develop life philosophy	49.6	53.0	59.1	54.8	49.0	63.3
Influence social values	34.0	33.6	45.6	37.7	31.6	63.0
Have admin. responsibility	40.9	37.0	35.1	35.2	39.7	31.5
Have business success	52.2	55.2	46.1	47.0	49.4	16.7
Be well off financially	66.2	67.6	48.4	54.2	65.2	13.8
Create artistic work	13.9	16.3	12.9	12.2	13.0	9.2

Bible college freshmen have lower academic objectives

than freshmen at other four-year colleges (Table 5).

Although most (92.2%) Bible college freshmen plan to obtain

a degree, two-thirds (67.1%) of them intend on a two-,

three-, or four-year degree. Less than a third (30.8%) of

the incoming students at other four-year colleges have

similar expectations. Graduate degrees are planned by

21.5% of the Bible college freshmen and 54.8% of the

freshmen at other four-year colleges (Astin, 1989; Bell,

1989).

Table 5. Highest Degree Planned (by percentage of freshman
class).

Item Response	Bible College Freshmen	All Four-Year Freshmen
None	5.6	0.9
Associate	7.2	1.0
3-Year Diploma	3.6	N/A
Bachelor	56.3	29.8
BD or MDiv	2.5	0.4
Masters	16.2	41.0
Doctorate	5.3	13.8
Other	1.1	1.7

Following are other characteristics of Bible college

freshmen. Just over half (55.7%) rely on their parents

and/or financial aid as the primary source of funds for

educational expenses. Many come from rural areas: 61%

come from home communities of under 50,000, and 52% have

home churches of less than 200. Most have been raised in

Christian families (74.7%) and have been Christians
themselves for 6 or more years (79.3%). While 70.5% look
to their parents for advice when making decisions, only
1.4% strongly agreed or agreed with the statement "My
parents made me attend this college." Most freshmen
(71.9%) believe that a Bible college education will prepare
them to meet their future educational and/or vocational
goals, and the majority (59.6%) are willing to serve in
foreign missions (Bell, 1989). Most freshmen (62%)
categorize themselves as "Conservative" in political
orientation though only 3.9% categorize themselves as "Far
Right." They are also conservative on major social and
moral issues such as legalizing marijuana (2.6%), viewing
premarital sex as permissible (1.7%), or liberalizing
divorce laws (2.9%) (Brown, 1982).

Summary Profile of Freshmen. "Typical" Bible college
freshmen are single, caucasian, and over the age of 18.
They are most likely high school graduates of average
intelligence planning on a bachelors degree. Many are
first generation college graduates from slightly lower than
average socioeconomic status. Their primary personal
objectives are to help others and to raise a family;
business success or becoming rich is of little concern.
They attend a college that is their first and only choice,
live in the dormitory or other college housing, and expect

to be satisfied with their college education. The majority
come from relatively small churches located in small towns
that are at least a hundred miles from the school. They
have Christian parents, are politically and morally
conservative, are willing to serve in foreign missions, and
plan on entering some type of full-time Christian service.

College Environment

The college environment that students in a Bible
college experience is quite different from the college
environment at other four-year colleges. It differs in
terms of service requirements, student activities, student
attitudes, student body characteristics and perceived and
realized outcomes.

Christian Service. One of the characteristics of
Bible college student life comes from D. L. Moody's
"learning by doing" philosophy. As Moody stressed the
practical application of classroom instruction, so today
Christian Service requirements exist in all Bible colleges.
These activities are considered co-curricular and an
important part of the student's professional preparation
(Eagen, 1981). Students are provided with a variety of
opportunities for ministry in the community, and through
these assignments many hospitals, retirement homes,
prisons, and rehabilitation centers have received
assistance. For example,

> After Hurricane Hugo smashed through South
> Carolina in September 1989, the Columbia Bible
> College student body voluntarily formed itself
> into dozens of independent teams and, with the
> guidance of the governor's office, fanned out
> across the state to help citizens clean up the
> devastation. (Kallgren, 1991, p. 28)

Student Activities and Attitudes. Student
organizations and special interest prayer meetings meet
regularly at most schools. Chapel services are mandatory
and occur from 3 to 5 days per week; there are often
additional mission meetings. Bible college students spend
approximately the same amount of time on school-related
activities and somewhat more time working on a job when
compared to other four-year college students (Brown, 1982).
Most Bible colleges have extensive social regulations, and
the entertainment functions include faculty advisors and
chaperons.

According to the College and University Environment
Scales survey (developed by C. Robert Pace), Bible college
students scored significantly higher in the area of
propriety than other college students. "Bible colleges are
far more orderly, conventional, proper and supervised than
any other kind of college studied so far in America"
(Brown, 1982, p. 170). This behavior is consistent with
the type of students drawn to Bible colleges in the first
place.

Demographic Characteristics. Whereas the demographic characteristics of freshmen have been previously described, the demographic characteristics of the student body as a whole differ from the freshman class in several ways. In 1989 the gender ratio for all students was 56% male to 44% female. Comparing this to the 49% to 51% freshmen ratio would indicate a higher drop out rate among the female students. Just over half (55%) of the students were classified as "in-state" with 41% "out-of-state" and 4% from foreign countries. The average distribution of class size was: 24% first-time freshmen, 20% other first-year students, 23% second-year students, 16% third-year students, and 17% fourth year students and beyond (AABC Fall 1990 Statistical Report). The average ratio of full-time students to part-time students was 82.3% to 17.7% for all accredited Bible colleges during the 1991-92 school year (AABC Fall 1992 Statistical Report).

Student Outcomes

The College Student Experiences (CSE) questionnaire, also constructed by C. Robert Pace, attempts to estimate the progress of students toward 18 widely agreed upon goals of the educational process as well as report on overall student satisfaction with their college. Based on the CSE, Bible college students reported higher estimates of gains than students in other types of colleges in the areas of

understanding others, ability to find information, self-

understanding, personal values, vocational training,

philosophies and cultures, and functioning as a team

member. They reported similar gains in the areas of

ability to synthesize, analytical thinking, preparation for

advanced education, writing clearly, health habits, and

literature appreciation. Bible college students reported

lower estimates of gains in general education, quantitative

thinking, science and technology, science and

experimentation, and art appreciation (Brown, 1982).

> The greatest distinction of the Bible college
> (compared to other types of colleges) is the
> overwhelming degree of satisfaction reported by
> students. Regardless of the particular Bible
> college attended, the vast majority of students
> are highly satisfied with their college
> experience and would attend the same institution
> again. While the Bible college may still be
> judged by some as an inferior option to the more
> traditionally oriented liberal arts college,
> those students who actually attend Bible
> colleges . . . give them higher ratings than do
> students at any other type of college. (Brown,
> 1982, p. 231)

Bible College Graduates

In 1980 the AABC sponsored a national survey of Bible

college graduates. Over 2,000 randomly selected graduates

responded to the survey, and Bosma and O'Rear wrote the

project report in 1981. All statistics in the following

section come from that report.

Degrees Received. Two-thirds of all graduates receive a bachelor degree while slightly over a fourth receive a three-year diploma. The remainder receive associate degrees (5%) or one-year certificates (2%). The percentage of bachelor degrees awarded is steadily rising as can be seen by comparing the 13% of pre-1930 graduates to the 79% of 1978-80 graduates who received bachelor degrees (p. 28, 29). One third of all graduates attended (8% actually graduated from) another college prior to attending to Bible college (p. 32).

Reasons for Attendance. While it is generally accepted that the purpose of Bible colleges is to "prepare full-time vocational Christian workers" (AABC Manual, 1993, p. 9), there were mixed opinions among the graduates regarding this. About a third (37%) did feel that the main purpose should be to train for vocational Christian ministry whereas 29% felt that the main purpose should be to stimulate personal and spiritual growth. Another 22% said the main purpose should be to "increase knowledge of the Bible" and only 5% said it should be "to provide a college level education" (p. 77). These responses closely parallel the reasons given for attendance.

In their decision to attend a Bible college, "to gain Bible knowledge" was very important to 88% of all graduates and somewhat important to an additional 11%. "To grow

spiritually" was very important to 79% and somewhat

important to an additional 19%. "To receive training for

vocational ministry" was very important to 59% and somewhat

important to another 26%. "To gain a college degree" was

very important to 26% and somewhat important to an

additional 36% (pp. 113, 15, 74, 75).

The importance attached to gaining a degree is rising.

Only 37% of the pre-1930 graduates rated this as either a

very important or somewhat important reason to attend a

Bible college. By the 1970's this percentage had risen to

69% (p. 76). As stated earlier, Bible college graduates do

not feel that the main purpose of a Bible college should be

to provide a college education, but the importance of also

receiving a college education is increasing substantially.

After being asked what they felt the main purpose of

Bible college should be, the graduates were then asked how

their Bible college fulfilled that purpose for them.

Forty-six percent rated their college as excellent, and 42%

rated it as good (p. 79). This indicates that although

students are choosing Bible college for a variety of

reasons, their Bible college is satisfying these various

needs.

Despite the fact that only 59% of the graduates listed

"to receive training for vocational ministry" as a very

important reason to attend Bible college and that only 37%

thought this should be the main purpose of Bible colleges,

71% stated that they were highly motivated to enter full-time Christian service (FTCS) at the time of enrollment. Of that 71% highly motivated to enter FTCS, 93% of them have been, are, or plan to enter FTCS (p. 68). It would appear that Bible colleges are correct in retaining their general purpose of training full-time vocational Christian workers even though many of these future workers have additional personal priorities that are also being fulfilled through the educational process.

Involvement in Full-Time Christian Service. Over half (57%) of all graduates were currently involved in FTCS at the time of the survey. An additional 17% had been previously involved in FTCS (18% of the graduates surveyed were over the age of 55), and 13% plan future involvement. This means that 87% of all Bible college graduates either have been, are, or plan to be involved in FTCS. (p. 115, 41)

Involvement in FTCS is related to both gender and to the type of degree received. Men are more likely to hold FTCS positions than women (82% to 59%), and those with bachelors degrees are more likely than those with diplomas, associate degrees, or certificates (62%, 49%, 36% respectively) (p. 41, 29).

Of the graduates actively involved in FTCS at the time of the survey, 60% served in a local church, 17% were in

missions, 16% were in educational institutions, and the remaining 11% were in a wide variety of other fields including evangelism, discipleship, service organizations, and Christian businesses (p. 51). Of the 43% not currently involved in FTCS, 13% were doing paid part-time Christian service ministries, and 69% were doing volunteer part-time Christian service. Therefore 86% of all graduates were actively involved in some form of Christian ministry at the time of the survey (p. 43).

Job Availability. Jobs in Christian ministry seem to be readily available for those who seek them. The overwhelming majority of graduates desiring to enter vocational ministry reported little or no trouble finding positions in their fields. Also, most of those who entered the ministry did so within 3 months of graduation from Bible college (p. 15).

Of the graduates involved in FTCS at the time of the survey, 89% stated that their job was in the field of their preference (9% were neutral, 2% disagreed), and 91% felt that their job was personally fulfilling (8% were neutral, 1% disagreed) (pp. 62, 63). Half of all graduates reported no problems in locating a job in their desired field. Those who majored in Bible, pastoral ministry, or missions had the highest involvement in FTCS and the least trouble finding a job related to their major (pp. 30, 31).

Again, gender is closely related to employment patterns.
While 38% of all women sought a FTCS position within their
field, 27% sought a FTCS position outside their field, and
35% did not look for any FTCS position. This compares to
68% of all men seeking FTCS positions within their field,
19% seeking FTCS positions outside their field, and only
13% not looking for any FTCS position. Only 5% of all
graduates (both male and female) reported that jobs within
their field were practically non-existent (pp. 38-40), and
3% said that they chose to continue their education
primarily due to lack of suitable employment opportunities.
However, 29% did indicate that additional education was
required for their desired employment (22% of those in
FTCS) (p. 33).

Additional Education. Over half (54%) of all
graduates had received additional formal education
subsequent to Bible college at the time of the survey.
While 35% of those who graduated within 2 years of the
survey had received additional education, 72% of those who
graduated approximately 20 years prior to the survey had
received additional education. This pattern seems to be
primarily due to age and time from graduation since only
half of those graduating approximately 20 years prior to
the survey plan on additional education compared to three-

fourths of those graduating within 2 years of the survey
(pp. 32, 35).

Though 70% of all Bible college graduates either have
received or plan to receive additional education, men are
more likely than women to plan subsequent education (53% to
39%), and those currently in FTCS are somewhat more likely
than those not currently in FTCS (52% to 42%) (p. 35). The
type of FTCS position held is related to the tendency to
receive additional education. Over two-thirds of those in
foreign missions, 81% of those in post-secondary education,
and 61% of those in K-12 education have received subsequent
schooling. Only 45% of those working in local churches and
41% of those in home missions have received additional
education (p. 52).

Most of the graduates continued their education at
secular schools. Many attended more than one type of
school but when asked to indicate the type of school at
which they spent the majority of their time, the responses
were as follows: state colleges or universities (29%),
seminaries (23%), graduate schools (15%), Christian liberal
arts colleges (10%), community or junior colleges (8%),
other Bible colleges (6%), vocational or business schools
(5%), and correspondence schools (3%) (p. 33).

The degrees received from subsequent colleges varied
widely. Twenty-five percent of those who continued their
education did not receive any degree, 2% received an

associate degree, 17% received a bachelor's degree, 35%
received a masters degree, and 7% received a doctorate.
Therefore, by 1980, 20% of all Bible college graduates had
earned graduate degrees. Of the graduates still planning
subsequent education, half (49%) planned on a masters
degree, and over a quarter (29%) planned on a doctorate or
beyond (p. 34, 36).

Satisfaction of Graduates. When asked what changes
they would make if they had their college careers to do
over, the majority (58%) of all Bible college graduates
indicated that they would do it basically the same way.
Only 6% would attend a different type of college instead of
Bible college whereas 12% would attend Bible college and
then transfer to a different type of college. The
remaining quarter (24%) would make changes such as the
types of courses or majors selected (p. 88).

Of the graduates in FTCS, 44% indicated that a Bible
college education was required for their job, and 46%
indicated that while it was not required for their job, it
was helpful. Only 10% felt that they could have gotten
their position without a Bible college education, and 85%
would recommend that a young person considering their
vocation receive a Bible college education (p. 60, 82).

The graduates not in FTCS rate their colleges just as
highly in training students for Christian ministry as do

those in FTCS and "have not refrained from Christian
ministry because of a feeling of inadequate preparation"
(p. 81). Just over half (55%) would still recommend that a
young person considering a vocation similar to their own
receive a Bible college education (p. 82).

CHAPTER 3

METHODOLOGY

Since the purpose of this study was to describe the learning strategies of Bible college freshmen and to determine which strategies and demographic characteristics were related to academic success, a non-experimental descriptive research design was utilized (Merriam, 1988). Descriptive research involves "collecting data in order to test hypotheses or answer questions concerning the current status of the subject of the study" (Gay, 1981, p. 12). A case study was chosen because of the exploratory nature of the research. This design is appropriate since the purpose of the study is to describe rather than to predict and because it enables the researcher to concentrate on many of the variables present in a single unit as opposed a few variables across a large number of instances (Merriam, 1988).

The Population

This study was conducted at Prairie Bible College. The administration was supportive of the study and quite willing to participate. The entire class of first term freshmen enrolled for at least six credits was used;

therefore, no sampling procedure was employed. There were
129 freshmen who met the criteria in September of 1993.
Seven students did not participate in the study, possibly
due to schedule conflicts with the administration of the
surveys. Of the 122 students who participated in the
study, 71 were male (59%) and 51 were female (41%). The
majority were single (80.5%) and nearly two-thirds (63.9%)
were 17-21 years old. Just over half (54.9%) are planning
to enter full-time Christian service (FTCS), whereas only
9.0% are planning not to enter FTCS; the remaining 36.1%
are as yet uncertain of their future vocation. Sixteen
students (13.6%) had been homeschooled for 1 or more years.

Instrumentation

The Learning and Study Strategies Inventory (LASSI)
was used in this study. It was designed by Dr. Claire
Weinstein, a professor in the Educational Psychology
Department and the director of the Cognitive Learning
Strategies Program at the University of Texas, Austin.
Weinstein developed the LASSI over a nine-year period in
response to the need to assess students entering her
"Learning to Learn" course. LASSI was published in 1987
and is now a nationally recognized instrument. As of April
1993, it has been used at 44% of all U.S. colleges and
universities. Though the instrument has been "re-normed"
twice since publication, the 1987 norms have not changed

(Weinstein, personal communication, February 4, 1994). The survey consists of 77 statements to which the students respond by rating themselves on a five-point Likert scale. The rating system ranges from "Not at all typical of me" to "Very much typical of me." The responses are then combined to produce 10 subscale indexes. Approximately half of the statements are worded positively, and half are worded negatively in order to avoid response bias. The first five indexes deal with the affective strategies of attitude, motivation, time management, anxiety, and concentration. The final five indexes cover the cognitive strategies of information processing, selecting main ideas, use of support techniques, self-testing, and test-taking strategies.

LASSI Scales

The first scale, Attitude, measures a general attitude toward school. Sample items include "I feel confused and undecided as to what my educational goals should be" and "I only study the subjects I like." Students who score low on this scale may not perceive school as relevant to their life goals and need to reassess how school fits into their future.

The second scale, Motivation, measures motivation to succeed in school as well as a willingness to perform the specific academic tasks needed for success. Sample items

include "When work is difficult I either give up or study only the easy parts" and "I set high standards for myself in school." Students who score low on this scale may need to accept more personal responsibility for their learning and should begin to set specific goals to accomplish necessary academic tasks.

The third scale, Time Management, measures the ability to manage time effectively. Sample items include "I only study when there is the pressure of a test" and "When I decide to study, I set aside a specific length of time and I stick with it." Students who score low on this scale may need to create more realistic schedules and learn how to deal with distractions and procrastination.

The fourth scale, Anxiety, measures the ability to cope with anxiety. Sample items include "Worrying about doing poorly interferes with my concentration on tests" and "I am very tense when I study." Some students who score low on this scale may be studying ineffectively (memorizing details or repeatedly re-reading the text); as they learn more effective ways to study and their performance improves, anxiety should fade. Other students may need to learn techniques such as positive self-talk to reduce cognitive worry, and then they will be able to focus on academics.

The fifth scale, Concentration, measures the ability to focus attention on academic activities such as studying

or listening in class. Sample items include "I concentrate fully when studying" and "I find that during lectures I think of other things and don't really listen to what is being said." Students who score low on this scale may need to work on setting priorities to reduce interfering thoughts, emotions, and situations.

The sixth scale, Information Processing, measures the ability to create images or verbal elaborations as well as organizational strategies. Sample items include "I translate what I am studying into my own words" and "I try to think through a topic and decide what I am supposed to learn from it rather than just read it over while studying." Students who score low on this scale may have difficulty connecting new material to prior knowledge which could in turn hinder their ability to retain the new material.

The seventh scale, Selecting Main Ideas, measures the ability to select the main ideas from reading and lecture material. Sample items include "I have difficulty identifying the important points in my reading" and "Often when studying I seem to get lost in details and 'can't see the forest for the trees.'" Students who score low on this scale have difficulty sifting the critical information from supporting details and may often spend needless extra hours of study trying learn the less important material possibly at the expense of primary concepts.

The eighth scale, Study Aids, measures the ability to use and create study aids. This scale includes both the study aids generated by textbook authors such as headings, summaries, and statements of objectives as well as student-generated aids such as diagrams, summary sheets, and underlining. Sample items include "I use special helps, such as italics and headings, that are in my textbooks" and "When they are available, I attend group review sessions." Students who score low on this scale may have difficulty taking responsibility for their own learning. They need to be shown how to recognize the aids provided for them in most textbooks and then to work on creating useful study aids that fit their personalities and study preferences.

The ninth scale, Self Testing, measures student's abilities to review and test their own level of understanding. Sample items include "I stop periodically while reading and mentally go over or review what was said" and "I try to identify potential test questions when reviewing my class material." Students who score low on this scale may be unaware of the importance of review. They may also do poorly on tests because they did not realize they were inadequately prepared.

The tenth scale, Test Strategies, measures the ability to adequately prepare for test situations. Sample items include "I have difficulty adapting my studying to different types of courses" and "In taking tests, writing

themes, etc., I find I have misunderstood what is wanted and lose points because of it." Students who score low on this scale may experience test-anxiety and poor self-image in academic settings. For these students, the test score may not be an accurate measurement of their knowledge and preparation (Weinstein, 1987).

LASSI Validity

Validity is the ability of a test to measure what it was designed to measure. For example, a bathroom scale is valid for measuring weight, but it is not valid for measuring height. A common example of an invalid test is a timed test that uses story problems to measure math skills. The items may indeed be require mathematical ability, but the students who score highly on this test are those who are the best readers and not necessarily the best mathematicians. Validation of an instrument is typically established in one or more of three ways: construct validity, content validity, and criterion-related validity.

Construct validity of the LASSI was addressed through repeated tests of user validity. As of 1988, professors, advisors, developmental educators, counselors, and learning center specialists at more than 30 colleges and universities had used the LASSI on a trial basis (Weinstein, 1988). By 1994, approximately 44% of all U.S.

colleges and universities had used this instrument
(Weinstein, personal communication, February 4, 1994).

Content validity was not specifically reported by
Weinstein, though it was somewhat addressed in the
development of the LASSI through three item-selection
procedures. First, social desirability was examined.
Self-report instruments are susceptible to inaccurate
responses on items deemed socially undesirable such as "I
do not do my homework" or "I am afraid to take tests."
During preliminary pilot testing, subjects who took the
LASSI also filled out the Marlowe-Crowne Social
Desirability Scale. All items on the LASSI that had a
correlation with the Social Desirability Scale above r =
.50 were eliminated. Pearson product moment correlations
(represented by the symbol r) are a statistical measurement
of correlation. They range from -1.0 to +1.0, therefore an
r of .5 is interpreted as a moderate, positive, linear
correlation between the item and social desirability. Next
all items which did not show a significant correlation to
GPA were eliminated. Finally, all items that could be
measured more accurately by an objective or performance
assessment, such as vocabulary or library skills, were
eliminated.

Criterion-related validity was addressed in two ways.
First, several of the scales were validated against
performance measures. For example, scores on the Selecting

Main Ideas index were compared to students' scores on selecting main ideas from texts and other readings (r = .40 and above). An r of .40 can be interpreted as a moderate, positive, linear correlation between the LASSI index and the students' ability to select main ideas from written materials. In the area of validity, this correlation is considered somewhat weak. In addition, Weinstein reports that "several" of the scales were validated against performance measures, but she does not specify how many or which ones.

The second way criterion-related validity was established was to compare the subtest scores, where possible, to other tests or subscales measuring similar factors. For example, scores on the Information Processing subtest of the LASSI were correlated with scores on the Elaborative Processing Scale of Schmeck's Inventory of Learning Processes (1977) (r = .6) (Weinstein, 1988). This Pearson r value is higher than the correlations with performance measures and therefore represents a stronger positive linear correlation between pairs of scales, but again, the names and number of the scales being correlated were not reported by Weinstein.

Whereas user validity is quite strong for the LASSI, both content validity and criterion-related validity are not well established (Blackwell, 1992; Hayes, 1992; Mealey,

1988). Therefore interpretations of the LASSI scores must be considered with this in mind.

LASSI Reliability

Once the validity of an instrument has been established, it is necessary to determine reliability. Reliability is the ability of the instrument to produce consistent results. When examining reliability statistically, there are two aspects to be considered. The first is the internal consistency of the test, and the second is the stability of a test's results over time.

Cronbach's coefficient alpha is a variance ratio which measures internal consistency. This is most easily understood with another example. One of the subscales on the LASSI is the motivation index. It is derived by combining a student's responses to 8 of the items on the test. Since each student has a "true" level of motivation, this index is attempting to describe that level of motivation. If a student scores very high on four of the questions it should indicate that in reality that student is highly motivated. Therefore, that same student should also score high on the remaining four questions of the motivation scale. Of course most students will have some variety among their responses, but if the index is accurately measuring motivation, there should be a lot of

similarity among the 8 responses. Cronbach's coefficient
alpha is a measurement of that similarity.

The second measure of a test's reliability is its
ability to produce results which do not change from day to
day. For example, another LASSI index measures time
management. A student who is capable of managing time
effectively should be able to take the LASSI today and
receive a high score on this scale. If the test is
accurately measuring the student's ability to manage time,
then that student should be able to take the same test
again in 2 weeks and receive a similarly high score. The
test-retest correlation coefficient measures this aspect of
reliability.

Each of the 10 subscales on the LASSI have been tested
for reliability with Cronbach's coefficient alpha and a
test-retest correlation (Table 6). Reliability
coefficients in the seventies are considered acceptable,

Table 6. Reliability ratings for LASSI scales.

Scale	Coefficient Alpha	Test-Rest
Attitude	.72	.75
Motivation	.81	.84
Time Management	.86	.85
Anxiety	.81	.83
Concentration	.84	.85
Information Processing	.83	.72
Selecting Main Ideas	.74	.78
Study Aids	.68	.75
Self-Testing	.75	.78
Test Strategies	.83	.81

whereas those in the eighties are "very satisfactory" (Gay, 1981, p. 123). One scale, Study Aids, has a coefficient alpha slightly under .70, but its test-retest correlation is .75. All other scales are well above the .70 standard so the LASSI can be considered a very reliable measurement of these 10 learning strategies.

Demographic Survey

The demographic survey consisted of 23 questions and covered personal information such as gender, age, marital status, and declared major. It also included general questions on family background such as the family's socioeconomic level, estimated parental annual income, mother and father's level of education, and native language. There were also questions dealing with the respondents prior education such as years of homeschooling, type of high school they graduated from, and the size of their graduating class. In addition, there were questions pertaining specially to Bible college students such as length of Christian experience, intent to enter full-time Christian service, whether they grew up in a Christian home, and whether they had been raised on a foreign mission field. A copy of the demographic survey in included in Appendix A.

Data Collection

Permission to administer the LASSI and demographic survey to the freshmen during the fall registration process was obtained in August of 1993 from the Academic Dean at Prairie Bible College. All of the freshmen were scheduled to take the two surveys during the second week in September of 1993, but through a checklist error, 28 of the freshmen were missed. These freshmen were contacted by the Assistant Academic Dean, and eventually 21 of them took the surveys. By October 31, 1994, seven students had still not taken the surveys. It was decided that these students could no longer be considered incoming freshmen and the data collection was stopped. In January of 1994, it was discovered that one student who took the LASSI in the fall had not taken the demographic survey. Since the responses to the demographic survey were in no way dependent upon the time of administration, the student was contacted and this survey was added to the rest of the responses. The first semester grade point average of each participating freshman was obtained through the registrar's office of the Bible college and attached to their survey responses by use of a student identification number. Eight freshmen did not return for the second semester, and this was coded as a twenty-fourth item on the demographic survey. All eight of

the non-returning freshmen were among the 122 freshmen who had completed the two surveys in the fall.

Accuracy of the survey responses was addressed by the use of a cover letter attached to the surveys which assured the students of their anonymity and asked them to respond as carefully and honestly as possible (Appendix B). In addition, the demographic survey incorporated "Unsure or Unknown" responses with all appropriate questions in order to discourage guessing. Although the LASSI is self-scoring, the students were instructed to respond to both the LASSI and the demographic survey on a scantron form. This was done to insure both ease and accuracy of scoring. In addition, the scantron forms were visually checked to verify the accuracy of the electronic scoring.

Method of Analysis

Three types of data analysis were conducted. First, descriptive statistics were used to construct a profile of the PBC freshman class of 1993-94. These statistics included frequency counts, means, standard deviations, and cross tabulations.

Second, cross tabulations were used to determine which learning strategies were related to academic success. The freshmen class was divided into thirds according to GPA. Cross tabulations were used to examine demographic and learning strategy differences between students in the top

third of the class and students in the bottom third of the class.

Finally, discriminate analysis was used to determine whether combinations of demographic traits and use of certain learning strategies could be used to discriminate between the academically successful students and the academically unsuccessful students.

CHAPTER 4

FINDINGS

The purpose of this study was to describe the learning strategies of the freshmen at Prairie Bible College and to determine which strategies and demographic characteristics were related to academic success. Data from two sources were collected for 122 first semester freshmen: learning strategy scores and demographic variables. The demographic findings are reported using frequency counts and cross tabulations. The learning strategy findings are reported by comparing PBC freshmen scores to the scores of other groups of freshmen and by comparing the strategy scores of different groups of PBC freshmen. Finally, the inter-relationship of data from these two sources is examined by using discriminate analysis.

Demographic Characteristics

The majority of freshmen at PBC were male (57.4%), single (81.1%), and under the age of 21 (62.3%). These proportions differ somewhat from Bell's 1989 survey of Bible college freshmen. In that study, fewer of the freshmen were male (49%), more were single (89.7%), and more were under the age of 21 (77.7%). Since age is

positively correlated to gender and marital status among

Bible college students, the fact that the PBC freshmen are

more likely to be married and male can be accounted for by

the increased proportion of older students.   Cross

tabulations revealed clear relationships between age and

gender among the PBC freshmen.   The majority of younger

students were female; the majority of older students were

male.   Of the 48 students who were 17-18 years old, 17

(35.4%) were male, and 31 (64.6%) were female.   Of the 46

students who were over 20 years of age, 37 (80.4%) were

male, and only 9 (19.6%) were female.   None of the 17-21

year-olds were married, yet more than half (56.1%) of the

students over 21 years of age were married.

When divided according to marital status, the single

students were fairly balanced in gender.   Just over half

(52.5%) of the single students were male, and just under

half (47.5%) were female.   The proportion was very

different among the married students.   Nearly four-fifths

(78.3%) of the married students were male, and only one-

fifth (21.7%) were female.   One explanation for this ratio

might be that many wives must work to support the family in

order to allow husbands to attend school.   In addition, it

should be noted that many student wives do take classes on

a part-time basis, but this study was limited to freshmen

taking six or more credits.   Nevertheless, the pattern

clearly exists that the younger students were more likely

to be single females, and the older students were more likely to be married males.

Most of the freshmen grew up in stable, Christian homes. Only a small percentage of the freshmen had experienced either the death of a parent (10.7%) or a divorce of the parents (5.7%). There was no relationship between age and the 7 students whose parents were divorced whereas 9 of the 13 students with one or both parents deceased were over 29 years of age. Over four-fifths (86.1%) of the freshmen had at least one parent who was a Christian, and over a quarter (28.7%) had parents who were or are in full-time Christian service. Cross tabulations revealed that of the 76 students aged 17-20 years, only one came from a home in which neither parent was a Christian. Of the 38 students who were over 22 years of age, 16 (42.1%) came from homes in which neither parent was a Christian, and 11 of these 16 were male. When this factor is added to the relationships between gender, age, and marital status, it can be seen that the younger single female students were very likely to come from Christian homes whereas about a third of the older married male students were likely to come from non-Christian homes. Most freshmen came from families who usually attended church together (76%) and who also usually spent holidays together (85.2%). Most of the freshmen had become Christians at a young age. Nearly two-thirds (65.6%) had

been Christians for 11 or more years, and only 14.7% of the freshmen had been Christians for less than 6 years. About a third of the freshmen (35.4%) judged their families to be socially "lower-class," and close to half (46%) estimated their parents annual income to be under $30,000 (Canadian currency). Only 10.6% felt their families were socially "upper-class" with 9.7% estimating their parents annual income to be over $70,000.

Although 1993 freshman norms were not available, the educational level of the parents of PBC freshmen was lower than the parents of the 1992 American freshmen at other four-year colleges. Among the 1992 freshmen, 41.9% had fathers with at least a bachelor's degree, and 33.3% had mothers with at least a bachelor's degree (Astin, 1992). This compares to 31.9% of the PBC freshmen with fathers having a college degree and to only 14.8% of the mothers having a degree. Although the number of college degrees was low, many of the parents of the PBC freshmen did have some college experience. An additional 32% of the fathers and 42.6% of the mothers had attended college but did not graduate. When only parents with college degrees are considered, approximately two-thirds (62.3%) of the PBC freshmen can be designated as "first-generation" college students.

Most (91%) of the freshmen spent the majority of their youth in their home culture. Of the 11 freshmen who grew

up in a culture other than their home culture, 6 had parents in FTCS. The school curriculum for 69.2% of the freshmen was based on a Canadian system with an additional 19.2% who received schooling based on an American system. Considering that PBC is a small college in rural Alberta, it was surprising to find that just over 1 out of every 10 freshmen (10.7%) used English as their second language.

The majority of freshmen came from small to medium-sized Canadian public high schools. Almost half (45.9%) came from high schools with graduating classes under 100, and another 41.8% had graduating classes between 100 and 500. Nearly all (95.9%) had high school diplomas, and an additional 1.6% had GED's. Most (63.3%) attended public high schools although a quarter (25%) of the freshmen came from Christian high schools. Only 16 students (13.1%) had received one or more years of homeschooling, and none had been homeschooled for more than 6 years. Of these 16 students, 11 came from an American curriculum, 13 were 17-18 years of age, and 15 had English as their first language. Although this is a very small sample, it would appear that for the students coming to PBC, homeschooling is more popular in the United States than in Canada and that an increasing number of homeschooled students are approaching college age. The grades in which students were homeschooled ranged from kindergarten through Grade 11

though the most frequent use of homeschooling occurred in

Grades 3-6.

Although all students were registered academically as

incoming freshmen to PBC, 17.6% had some prior college

experience, and 4.2% already had a college degree. The two

most frequently chosen programs of study were the Bachelor

of Religious Education (19.7%) and Prairie's only two-year

program, the Associate of Arts in Religious Studies

(17.2%). At the time of the survey, 15.6% of the freshmen

had not chosen a program, and the remaining students

(47.5%) were spread among the other seven programs offered.

Of the 122 freshmen in the study, one did not complete the

first semester, and eight others did not return for the

second semester. The seven full-time freshmen who did not

participate in this study all returned for the second

semester.

With regard to future plans of full-time Christian

service (FTCS), the PBC freshman class is very similar to

Bell's 1989 study of Bible college freshmen. In that study,

53% of all incoming Bible college students planned on

entering FTCS, and another 34% were undecided at the time

of entry. At PBC, 55.7% of the freshmen planned on FTCS

with an additional 35.2% undecided. Age was closely related

to student plans about FTCS. As would be expected, more of

the younger students were unsure of their future plans.

Close to half (46.1%) of the 17-20 year olds were undecided

compared to only 17.4% of those over 20 years. Whereas 39.6% of the 17-20 year olds plan on FTCS, over three-quarters (78.3%) of those 21 and older plan on FTCS. Only 2 freshmen over 20 years of age had planned not to enter FTCS.

With the strong relationships of gender and marital status to age, two distinct types of students can be seen. The first type is the young, single, female student who has been raised in a stable home with Christian parents and who is probably still uncertain as to her future plans. The second type of student is the older, married male whose parents may or may not be Christians and who is very likely to be planning on FTCS.

Demographic Groupings and Grade Point Average

Groups within seven of the demographic variables showed virtually no relationship to GPA. There was a difference of less than two-tenths of a grade point among the groups for the following demographic variables: parents marital status, whether families spent holidays together or attended church together, the parents involvement in FTCS, the students' plans to enter FTCS, whether English was the students primary language, and whether the student had been homeschooled. Table 7 gives the average GPA for all demographic groups that contained at least 10 freshmen and that differed by at least two-tenths of a grade point.

Table 7. Comparison of mean GPA for selected demographic
          groups.

Demographic Characteristic	Mean GPA	N
Age		
17-18 years	2.89	48
19-20 years	2.57	28
21-24 years	2.65	13
25 and over	3.09	33
Gender		
Male	2.71	70
Female	3.03	52
Marital Status		
Single	2.64	99
Married	3.31	23
Academic Program		
BTh	2.93	12
CBS	3.05	15
BRE	2.71	24
BMin	2.75	10
AARS-Aviation	2.79	12
AARS	2.79	21
Grew up in Christian Home		
neither parent Christian	3.11	17
both parents Christian	2.82	96
Years of Christian Experience		
0-5 years	2.67	18
6-10 years	2.76	24
over 10 yrs	2.91	80
Home Culture		
raised in home culture	2.87	111
not raised in home culture	2.56	11
Social Class		
lower-class	2.80	42
middle-class	2.97	64
upper-class	2.40	14
Parents Income		
less than 30,000	2.75	52
between 30,000 and 60,000	2.90	43
over 60,000	2.78	18
Mothers Education		
no college	2.75	52
attended college	2.91	70
Fathers Education		
no college	2.68	44
attended college	2.93	78
High School Curriculum		
Canadian	2.91	83
American	2.67	23
Type of High School		
public	2.81	76
private	2.96	35
Size of Graduating Class		
under 26 students	2.62	17
between 26-100 students	2.89	39
between 101-500 students	2.90	51
Students Educational level		
no prior college experience	2.79	93
prior college experience	3.22	26

Age and gender were related to average GPA. The students over 25 years of age tended to do better academically than the students under 25. The female students tended to do better than the male students. Since the older students tended to have higher GPAs than the younger students and since the older students were predominantly male, the fact that the males had lower average GPAs than the females seemed surprising. This apparent contradiction was explained by examining cross tabulations of gender with age (Table 8).

Table 8. Cross-tabulation of Gender by Age on Freshman
          mean GPA.

Age	Males	Females	Total
17-18	2.55 (17)	3.08 (31)	2.89
19-24	2.54 (27)	2.68 (14)	2.59
25 and up	2.98 (26)	3.49 (7)	3.09
Total	2.71 (70)	3.03 (52)	2.85

Note.   The number of students within each group is given
         in parentheses.

The average GPA for males 17-24 years of age was 2.55; the average GPA for males over 24 was 2.98. Therefore, the majority (63%) of younger males receiving fairly low GPAs brought the overall male average below the female average. A slightly different pattern was observed among the female freshmen. The older females still had the highest average GPAs with those over 24 averaging 3.49. However, the younger women fell into two categories. The youngest

group, aged 17-18, averaged 3.08 whereas the 19-24 year old women averaged 2.68. Therefore, the youngest and the oldest groups of female freshmen had the highest average GPAs. The middle group, the 19-24 year old females, actually averaged below the older males.

Marital status and growing up in a Christian home were related to the age of the freshmen. It was anticipated that married students and students from homes in which neither parent was a Christian would have higher GPAs than single students and students from homes in which both parents were Christians because the former groups contained the older students and the older students had higher GPAs (Table 9). Cross tabulations revealed that even when accounting for age, the married students and the students from non-Christian homes still had higher average GPAs than the single students and those from homes in which both parents were Christians.

Table 9. Cross-tabulations of Marital Status and Growing Up in a Christian Home by Age on Freshman mean GPA.

Age	Married	Single	Neither Par. Christian	Both Parents Christian
17-21	---* (0)	2.76 (81)	---* (1)	2.81 (74)
22 and up	3.31 (23)	2.63 (18)	3.21 (16)	2.85 (22)
Total	3.31 (23)	2.74 (99)	3.11 (17)	2.82 (96)

* Average was not computed due to a small number of students in the group; the number of students within each group is given in parentheses.

There was only a slight association between length of Christian experience and freshmen GPA (Table 10). As length of Christian experience increased, average GPA tended to rise. However, this tendency occurred primarily among the female freshmen rather than the males. When examining only the female freshmen, GPA clearly increased as length of Christian experience increased. However, when comparing the male freshmen, the average GPA rose slightly as length of experience increased from 0-5 years to 6-10

Table 10. Cross-tabulation of Length of Christian Experience by Gender on Freshman mean GPA.

| | Length of Christian Experience | | | |
	0-5 years	6-10 years	Over 11 years	Total
Males	2.71 (15)	2.80 (13)	2.68 (42)	2.71 (70)
Females	---* (3)	2.72 (11)	3.16 (38)	3.03 (52)
Total	2.67 (18)	2.76 (26)	2.91 (80)	2.85 (122)

* Average was not computed due to a small number of students in the group; the number of students within each group is given in parentheses.

years, and then dropped slightly as experience increased to over 10 years. These small differences among the GPA for male freshmen would indicate that for the males, length of Christian experience was not related to GPA.

The freshmen who had prior college experience had a higher average GPA than those freshmen without college experience. Since the older students have higher average GPAs and since the students with prior college experience

are among the older students, it was again anticipated that
the students with prior college experience would have
higher GPAs because of their increased age. This was not
the case. Cross tabulations revealed that even among
students of the same age group, students with prior college
experience had higher average GPAs than those without prior
experience. In fact, the distance between groups became
more pronounced after accounting for age (Table 11).

Table 11. Cross-tabulations of Prior Educational Experience
by Age on Freshman mean GPA.

Age	No Prior College	Prior College	Total
17-21 years	2.80 (74)	2.87 (5)	2.80 (79)
Over 22 years	2.75 (16)	3.30 (21)	3.06 (37)
Total	2.79 (90)	3.22 (26)	2.85 (122)

Note. The number of students within each group is given in
parentheses.

The choice of academic program was only weakly related
to GPA (Table 12). There were 6 programs that had 10 or
more students in them. Freshmen in two of these programs,
the Bachelor of Theology (Bth) and the Certificate of
Biblical Studies (CBS), had average GPAs above the overall
freshmen mean of 2.85. Freshmen in the remaining four
programs had average GPAs slightly below the overall
average: the Bachelor of Religious Education (BRE), the
Bachelor of Ministries (Bmin), the Associate of Arts in

Aviation (AARS-Aviation), and the Associate of Arts in Religious Studies (AARS). The two programs which were predominantly male in enrollment (Bth and AARS-Aviation) were two of the three programs in which the males had the highest average GPAs.

Table 12. Cross-tabulation of Programs enrolling 10 or more freshmen by Gender on Freshman mean GPA.

	Males	Females	All freshmen
Bth	3.07 (11)	---* (1)	2.93
BRE	2.53 (13)	2.91 (11)	2.71
Bmin	2.59 (5)	2.91 (5)	2.75
AARS-Aviation	2.81 (11)	---* (1)	2.79
AARS, non-Av.	2.23 (8)	3.13 (13)	2.79
CBS	3.01 (8)	3.09 (7)	3.05
Total for all Programs	2.71 (70)	3.03 (52)	2.85

* Average was not computed due to a small number of students in the group; the number of students within each group is given in parentheses.

Whereas three of the variables reflecting the home environment of the student were not related to GPA (parents' marital status, spending holidays together, and attending church together), five other environmental variables were related to GPA. The average GPA of students who were raised in their home culture was slightly higher than the average GPA of those who were not raised in their home culture. The financially and socially "middle-class" freshmen had slightly higher average GPAs than either the "lower-" or "upper-" class groups. The freshmen whose

parents attended college had somewhat higher average GPAs than those whose parents did not attend college.

The type of high school attended as well as its size and origin of curriculum was somewhat associated to GPA. The students from the Canadian curriculums did better academically than those from the American curriculums, and the students from private high schools did better than those from public high schools. The average GPA of freshmen from private secular high schools was 3.13, from private Christian high schools was 2.93, and from public high schools was 2.81.

This pattern seemed to contradict the findings among high school sizes. The students from the smallest graduating classes of 1-25 had the lowest average GPAs, and the students from the largest classes had the highest GPAs. This seemed surprising since the students from the private schools had higher averages and since private schools are typically smaller than public schools. Cross tabulations were run on high school size with high school type for average GPAs to examine this apparent contradiction (Table 13). There were only 110 students who responded to both questions on size and type of high school. Of these, the 11 freshmen from private schools with graduating classes under 26 students did in fact have a low average GPA. However, the average GPA of the students from senior classes of 26-100 showed a dramatic rise, and although

there were only 8 freshmen from private high schools with
senior classes of 101-500, their average GPA was quite
high. When these two groups were combined into 23 students
with senior classes of 26-500 students, their average GPA
was 3.21. There were 76 students who attended public high
schools and who responded to the question of graduating
class size. Only 5 (6.6%) came from senior classes of 1-25
students, and they had an average GPA of 2.66--slightly
higher than the freshmen attending private high schools of
the same size. This would suggest that students who come
from very small schools did not do as well academically
regardless of the type of school. As high school class
size increased, the average GPA of freshmen from public
schools also rose though not as rapidly as the freshmen
from private schools. Thus, students from both types of
schools appear to do better as size increases to at least a
senior class size between 101 and 500. There were no
students from private high schools with senior classes over

Table 13. Cross-tabulations of Public and Private High
Schools by Size of Graduating Class on mean GPA.

Number of Students	Public HS	Private HS	Total
1-25	2.66 (5)	2.59 (11)	2.62 (17)
26-500 combined	2.80 (63)	3.21 (23)	2.90 (90)
26-100	2.73 (21)	3.17 (15)	2.89 (39)
101-500	2.84 (42)	3.30 (8)	2.90 (51)
Total	2.79 (68)	3.01 (34)	2.86 (107)

Note. The number of students within each group is given in
parentheses.

500, and there were only 6 from public schools so
comparison of larger sizes was not possible.

Profile of Learning Strategies

The average score for each of the 10 learning strategy
scales of the LASSI was computed on the freshman class as a
whole. These 10 averages were then compared to the
averages of freshman classes at two universities by using
one sample t-tests. A one-sample t-test compares the mean
of one set of scores to an established value which is the
mean of another set of scores. This statistic is used to
answer the question "What is the probability that my sample
could come from a population with this established mean
score?" An alpha of .05 was used as the criteria for
statistical significance. An alpha of .05 means that if
there were truly no difference between the PBC freshmen and
the freshmen in the established group, the odds of finding
these differences would be less than 5 in 100. Weinstein,
the author of the LASSI, used 880 freshmen at the
University of Texas (UT) in Austin to establish the
normative data for this instrument. However, UT is
considered a high selectivity university because it
requires either SAT scores of 1100 or ACT scores of 26 for
freshman admission. Therefore, the mean scores for an
additional university were also used. Murray University is
a low selectivity university in Kentucky which requires ACT

scores of 22 for freshman admission. However, the mean
scores from this university only represent the 1988
freshman class of 514 students and should not be considered
normative data.

The $\underline{t}$-tests revealed no significant differences between
the PBC freshmen and the UT freshmen on 5 of the 10 scales.
This meant that the differences in scores for Attitude,
Time Management, Concentration, Information Processing, and
Study Aids could statistically only be attributed to
chance. For the other five scales of Motivation, Anxiety,
Selecting Main Ideas, Self Testing, and Test Strategies,
the PBC freshmen scored significantly lower than the UT
freshmen. When compared to the freshmen at Murray
University, there were no statistical differences on the
four scales of Motivation, Time Management, Selecting Main
Ideas, and Self Testing. However, on the six scales of
Attitude, Anxiety, Concentration, Information Processing,
Study Aids, and Test Strategies, the PBC freshmen scores
were significantly higher (Table 14). For only one
strategy, Time Management, there was no significant
difference between the freshmen at PBC and those at either
of the other two colleges.

Although PBC had no academic entrance requirements, these
comparisons would indicate that with respect to the use of
several of the learning strategies, the PBC freshmen are
somewhat less proficient than the high selectivity

Table 14. Comparison of Average Learning Strategy Scores for Freshmen at Three Colleges.

Scale	UT	Murray	PBC
Attitude	31.8	30.0**	31.3
Motivation	30.8*	28.5	29.3
Time Management	23.2	22.6	23.1
Managing Anxiety	26.2*	22.4**	24.8
Concentration	24.9	24.2**	25.5
Information Processing	26.8	24.6**	26.4
Selecting Main Ideas	17.9*	17.1	17.1
Study Aids	24.7	22.9**	24.5
Self Testing	25.4*	24.5	24.4
Test Strategies	29.4*	26.9**	28.0

 * PBC was statistically lower than UT Norms.
** PBC was statistically higher than Murray Univ.

university freshmen and somewhat more proficient than the low selectivity university freshmen. It should be noted that although there were statistically significant differences on most of the scales, the differences themselves were relatively small. Statistical significance is not necessarily of practical significance (Gay, 1981, p. 303). With the exception of the Anxiety scale, the PBC freshmen did not differ from the freshmen at either of the other two colleges by more than 1.8 points on scales that had possible ranges of 32 points.

When the 10 learning strategy scales were correlated with each other, moderate relationships between several of the scales were revealed. With 10 scales, 45 Pearson r's were calculated. That is, Attitude was correlated to each of the other nine scales, then Motivation was correlated to

each of the remaining eight scales, and so on for the rest
of the scales. Nearly half (21) had r's greater than .40,
indicating a possible overlap of the strategies being
measured.

The Use of Learning Strategies Among the Most and Least Academically Successful Students

The academically successful students were selected as
the top third (33.6%) of the freshman class according to
first semester GPA. There were 41 students with GPAs
ranging from 3.32 to 4.0. Their average GPA was 3.6 with a
standard deviation of .20. These freshmen had higher
average scores on all 10 of the LASSI scales than the
freshman class as a whole (Table 15).

Table 15. Comparison of Average Learning Strategy Scores
for PBC Freshmen with Highest and Lowest GPAs.

	High GPA freshmen		Low GPA freshmen		All freshmen
	Mean	SD	Mean	SD	
Attitude	33.0	3.5	29.3	6.0	31.3
Motivation	31.7	3.6	26.7	5.6	29.3
Time Management	24.6	4.7	21.5	5.4	23.1
Anxiety	25.6	5.9	23.9	6.1	24.8
Concentration	26.8	4.5	24.3	5.1	25.5
Info. Processing	27.4	5.9	25.1	6.1	26.4
Sel. Main Ideas	17.9	3.6	15.9	3.2	17.1
Study Aids	25.9	4.8	23.5	5.6	24.5
Self Testing	25.9	4.5	23.0	4.7	24.4
Test Strategies	29.7	3.7	26.4	5.3	28.0

The less academically successful students were
selected as the bottom third (33.6%) of the freshman class

according to first semester GPA. These 41 students had GPAs ranging from 0.00 to 2.66. Their average GPA was 1.9 with a standard deviation of .68. These freshmen had lower average scores on all 10 of the LASSI scales than the freshman class as a whole (Table 15).

An important difference between the academically successful students and the less successful students was the range of strategy scores. Among the less successful students, the use of learning strategies was much more varied. In fact, a few of the poorer students and many of the middle students actually scored higher on individual learning strategy scales than the better students. For example, in use of Time Management, the individual student scores ranged from 10 to 39 for the whole freshman class. The scores for the 41 students in the bottom third of the class ranged from 10 to 36--showing that while some of the poorer students were very weak in time management, others were quite proficient. The scores for the 41 students in the top third, however, ranged from 15 to 32. Whereas these freshmen were not "more" proficient than the other students, none of them were as weak. This would indicate that better students are not necessarily better because of expertise with certain learning strategies but rather that they are more consistent and more balanced in their ability to use all of the strategies moderately well.

The Academic Success of High
and Low Strategy Users

The previous two sections dealt with the use of strategies among the most successful and least successful freshmen. The next two sections deal with the academic success of the high and low strategy users. To examine this, the freshman class was divided into approximate thirds for each of the 10 strategies. The highest strategy users were then compared to the lowest strategy users. For example, the 36 freshmen who had the highest scores on the Attitude scale were placed in one group and contrasted with the 37 freshmen who had the lowest scores on the Attitude scale. The number of freshmen varied slightly between the high group and the low group because students were assigned placement according to their strategy scores. No students with identical strategy scores were placed in different groups simply to keep group size balanced. The average GPA for each group was then computed. If the use of a learning strategy is not related to GPA, then it would be expected that the average GPAs for both groups would be similar. This was not the case. For every one of the 10 learning strategies, the highest strategy-users averaged higher GPAs than the lowest strategy-users (Table 16).

Table 16. Mean GPA Comparison of High and Low Strategy
Users among PBC freshmen.

Scale	High Strategy Users	Low Strategy Users
Attitude	3.00	2.51
Motivation	3.17	2.47
Time Management	3.05	2.62
Anxiety	3.00	2.66
Concentration	3.17	2.60
Information Processing	3.03	2.69
Selecting Main Ideas	3.06	2.64
Study Aids	3.04	2.57
Self Testing	3.09	2.63
Test Strategies	3.13	2.66

Demographic Characteristics and the
Use of Learning Strategies

In order to determine whether certain types of
students were prone to use certain types of learning
strategies, select demographic groupings were cross-
tabulated with the 10 learning strategies. The age of the
freshmen was related to strategy use. Although there was
an initial decline from the 17-18 year olds to the 19-20
year olds, the use of all strategies generally tended to
increase with age (Table 17). The freshmen 30 years and
older used the following six learning strategies more
frequently than any other freshmen: Time Management,
Concentration, Information Processing, Selecting Main
Ideas, Self Testing, and Test Strategies. For three other
strategies, Attitude, Motivation, and Controlling Anxiety,
the 25-29 year olds were the most frequent users. The

Table 17. Comparison of mean Learning Strategy Scores
          According to Age of Freshmen.

Scale	17-18	19-20	21-24	25-29	30 up	Range
Attitude	30.7	29.1	30.2	34.7*	34.2	5.6
Motivation	29.7	26.6	28.6	32.0*	31.1	5.4
Time Management	22.3	20.9	22.5	23.9	27.9*	7.0
Anxiety	23.8	23.9	25.9	27.6	25.9	3.8
Concentration	24.2	24.0	25.5	27.5	29.1*	5.1
Info. Processing	25.0	24.3	27.7	29.3	30.0*	5.7
Sel. Main Ideas	16.9	16.1	16.2	17.2	19.2*	3.1
Study Aids	25.4*	24.0	23.2	22.1	25.2	3.3
Self Testing	24.0	22.1	24.2	26.2	27.7*	5.6
Test Strategies	27.6	26.5	27.9	29.6	30.0*	3.5

* Highest averages for each scale.

19-20 year olds were the least frequent users of 8 of the
10 strategies. The 17-18 year olds were the least frequent
users of Anxiety control strategies and the most frequent
users of Study Aid strategies. The largest difference that
occurred among the age groups was in Time Management. For
the freshmen under 30, the averages ranged from 20.9 to
23.9; the freshmen 30 and older had an average score of
27.9.

Strategy use was also related to both gender and
marital status. Male freshmen used 8 of the 10 strategies
more frequently than the female freshmen. The $\underline{t}$-test for
two independent samples was used to determine which of the
differences were significant. Two significant differences
were revealed: the males made more frequent use of Anxiety
control strategies, and the females made more frequent use
of Study Aids (Table 18).

Table 18. Comparison of mean Learning Strategy Scores for
          Male and Female Freshmen.

Scale	Males	Females	Difference
Attitude	31.8	30.5	+1.3
Motivation	29.1	29.6	-0.5
Time Management	23.6	22.6	+1.0
Anxiety	26.2	22.8	+3.4*
Concentration	26.1	24.5	+1.6
Information Processing	27.1	25.5	+1.6
Selecting Main Ideas	17.4	16.6	+0.8
Study Aids	23.1	26.3	-3.2*
Self Testing	24.5	24.3	+0.2
Test Strategies	28.4	27.4	+1.0

* p-values < .05

Married students made more frequent use of all 10 learning strategies than the single students. Significant differences were found on four of the five affective strategies: Attitude, Motivation, Time Management, Concentration and on three of the five cognitive strategies: Information Processing, Selecting Main Ideas, and Self Testing (Table 19).

Table 19. Comparison of mean Learning Strategy Scores for
          Married and Single Freshmen.

Scale	Married	Single	Difference
Attitude	34.5	30.5	+4.0*
Motivation	31.5	28.8	+2.7*
Time Management	27.2	22.2	+5.0*
Anxiety	25.8	24.5	+1.3
Concentration	29.0	24.7	+4.3*
Information Processing	29.4	25.7	+3.7*
Selecting Main Ideas	18.4	16.8	+1.6*
Study Aids	24.5	24.5	0.0
Self Testing	27.4	23.7	+3.7*
Test Strategies	29.8	27.6	+2.2

* p-values < .05

Prior college experience and the nationality of high
school curriculum were also related to strategy use (Table
20). The 26 freshmen with previous college experience made
significantly more use of the following eight learning
strategies than the first-time freshmen: Attitude, Time
Management, Controlling Anxiety, Concentration, Information
Processing, Selecting Main Ideas, Self Testing, and Test
Strategies. Use of Study Aids was the only learning
strategy that the first-time freshmen used more frequently
than the freshmen with prior college experience.

Table 20. Comparison of mean Learning Strategy Scores for
Freshmen With and Without Prior College
Experience.

Scale	No Prior College	Prior College	Difference
Attitude	30.7	33.2	+2.5*
Motivation	29.1	30.3	+1.2
Time Management	22.7	25.3	+2.8*
Anxiety	24.1	27.4	+3.3*
Concentration	24.9	28.3	+3.4*
Information Processing	25.6	29.4	+3.8*
Selecting Main Ideas	16.6	18.8	+2.2*
Study Aids	25.0	23.6	-1.4
Self Testing	24.0	26.2	+2.2*
Test Strategies	27.4	30.0	+2.6*

* p-values < .05

The freshmen from Canadian curriculums used 9 of the 10
strategies more often than the freshmen from American
curriculums although only Concentration was significantly
different (Table 21).

Table 21. Comparison of mean Learning Strategy Scores for Freshmen from Canadian and American High School Curriculums.

Scale	Canadian	American	Difference
Attitude	31.3	30.7	+0.6
Motivation	29.5	29.1	+0.4
Time Management	23.3	21.1	+2.2
Anxiety	25.3	23.5	+1.8
Concentration	26.2	22.6	+3.6*
Information Processing	26.1	25.3	+0.8
Selecting Main Ideas	17.1	16.1	+1.0
Study Aids	24.6	24.6	0.0
Self Testing	24.2	23.7	+0.5
Test Strategies	28.3	26.6	+1.7

* p-value < .05

Two other demographic variables, Academic Program, and plans for FTCS, were related to strategy use. However, both of these variables must be considered in light of their gender ratios and the fact that the male freshmen made more frequent use of 8 of the 10 strategies. Freshmen in the two programs which had an 11 to 1 ratio of males to females (Bth and AARS-Aviation) used all of the strategies except Study Aids more often than freshmen in the other programs. The BMin program had a 13 to 11 ratio of males to females, and the freshmen in this program used Study Aids more often than the freshmen in the other programs. Nearly three-quarters (72.1%) of the freshmen planning on FTCS were male, and these freshmen used all of the strategies except Study Aids and Anxiety Control more frequently than either those not planning on FTCS or those unsure of FTCS.

No differences were revealed among three additional demographic groupings. Freshmen who spoke English as their native language did not differ from the freshmen who did not speak English as their native language. Freshmen who were homeschooled did not differ from freshmen who were not homeschooled, and freshmen from public high schools did not differ from freshmen from private high schools.

Thus, a general profile of the PBC freshmen is that the students who were either older, male, married, or in the BTh and AARS-Aviation programs tended to make frequent use of all learning strategies except Study Aids. Freshmen who were either female, 17-18 years of age, or in the BMin program were the most frequent users of Study Aids. Freshmen with prior college experience tended to make frequent use of Concentration, Information Processing, and Anxiety Control strategies. The freshmen from Canadian curriculums tended to make more use of Concentration strategies than freshmen from American curriculums. Freshmen planning on FTCS made more frequent use of Attitude, Time Management, Concentration, Information Processing, and Selecting Main Ideas as learning strategies than either the freshmen planning not to enter FTCS or those unsure of FTCS.

Discriminating Between the Most Successful and the Least Successful Freshmen

When two or more mutually exclusive groups exist and the researcher is interested in describing or predicting placement in these groups, discriminant analysis is an appropriate statistic. This statistical technique is capable of simultaneously considering all of the available variables and then selecting the variables which are best able to distinguish each group from the others. Discriminant analysis produces a mathematical formula, known as the discriminant function, by examining the linear combinations of the variables. Once this formula has been derived, the variables in the function can be used to describe group characteristics. In addition, when the scores from the function are standardized, they can be used to give the comparative descriptive strength of each variable. Standardizing is necessary because the variables have different measurement ranges, and standardizing the scores gives each variable a mean score of zero and a within-group standard deviation of one. Using the discriminant function, it is also possible to predict group membership from the variables. In other words, when the 1994 PBC freshmen arrive in September and the demographic data and learning strategy information is collected, it will be possible to predict whether each student will be academically successful or academically unsuccessful. Of

course, how accurate the prediction actually is will depend upon how well the variables discriminate between the two groups and how similar the 1994 freshmen are to the 1993 freshmen.

The SPSS Discriminant program was used to run the analyses. A step-wise selection method was used to enter the variables with Wilks' lambda as the criterion for inclusion. Cases with missing values were included due to the small number of missing values and the limited size of the population.

Statistical Assumptions and Violations

Klecka (1990) outlines the following mathematical requirements which underlie discriminant analysis.

1. There must be two or more mutually exclusive groups.

2. There must be at least two cases per group.

3. There may be any number of discriminating variables, provided that the total number is less than the number of cases minus two.

4. No discriminating variable may be a perfect linear combination of other discriminating variables.

5. Each group must be drawn from a population with a multivariate normal distribution on the discriminating variables.

6. The covariance matrices for each group must be approximately equal unless special formulas are used.

7. The discriminating variables must be measured at the interval level (pp. 8-11).

It was possible to meet the first five assumptions without modification of the variables. Box M tests were used to test for the sixth assumption, the equality of group covariance matrices. For four of the six discriminant analyses, it was necessary to delete one of the discriminating variables in order to bring the group covariance matrices to approximate equality. The deleted variables were chosen as those that had the least impact on the classification accuracy and canonical correlations.

The seventh assumption, that variables are of the interval level of measurement, was met for the LASSI variables but not for the demographic variables. Although Lachenbruch (1975) described discriminant analysis as a fairly robust statistic that will tolerate minor violations of the assumptions, Gilbert (1968) found that the linear discriminant function often performs reasonably well in the case of dichotomous nominal variables. Therefore, many of the variables on the demographic survey were modified to produce dichotomous responses. Of the 23 demographic questions, responses to the following 10 questions were useable in their original form (see Appendix A for full question): gender, parents employed in FTCS, student

intent on FTCS, family usually spent holidays together, family usually attended church together, social status, estimated annual parental income, English as native language, student spent majority of youth in home culture, and size of graduating class. Modifications were made on the responses for 11 of the questions. Age was combined into three groups: 17-20, 21-24, 25 and over. Marital status of the student was combined into two groups: single and married. Program was combined into two groups: BTh and "all other programs." Years of Christianity was combined into four groups: uncertain of Christianity or no answer, 0-5 years, 6-10 years, 11 or more years. Parents marital status was combined into married, and all other responses. Mother's, father's, and student's educational attainment were each combined into two groups: no college experience and college experience. High school curriculum was combined into two groups: Canadian and all other nationalities. Homeschooling was combined into two groups: yes and either no or unsure. Type of high school graduated from was combined into two groups: private high schools and all other types of high schools. The variable of growing up in a Christian home was eliminated because of its similarity to the variable of attending church as a family. The variable dealing with specific grades of homeschooling was eliminated because the 104 students who were not homeschooled could not be included.

Comparison of Top and Bottom
Thirds of the Class

In this study, the students were first separated into two groups according to their first semester GPA. The top third (33.6%) contained the 41 students with the highest GPAs in the freshman class. The bottom third (33.6%) contained the 41 students with the lowest GPAs. Three discriminant analyses were run on these two groups. The first analysis contained only the 10 learning strategies. The second analysis contained only the demographic variables. The third analysis contained both the learning strategies and the demographic variables.

Learning Strategies. In the analysis using the 10 LASSI variables, the Study Aids strategy was deleted in order to meet the assumption of approximate group covariance equality. The following function was derived:

$$\underline{D} = .21 \text{ (Motivation)} + .06 \text{ (Self-Testing)} + .10 \text{ (Test Strategies)} - .09 \text{ (Attitude)} - 7.45$$

These scores were then standardized in order to compare their relative strengths. The standardized coefficients were:

> Motivation (.98)
> Test Strategies (.46)
> Attitude (.45)
> Self-Testing (.26)

Because Motivation has the largest standardized score, it is the learning strategy that contributes the most to the function for distinguishing the freshmen in the bottom

third of the class from the freshmen in the top third of the class. In order to use this function to classify freshmen into the two groups, it is necessary to know two things: first, the scores of the individual on these four learning strategies and second, the two group centroids. The group centroids are determined by calculating a discriminant function score, $\underline{D}$, on the mean strategy scores for each group. For example, the bottom group averaged 26.7 on the Motivation scale, 23.0 on the Self Testing scale, 26.4 on the Test Strategies scale, and 29.3 on the Attitude scale. These scores would be placed in the full discriminant function as follows: $\underline{D}$ =.207989 (26.7) + .05712924 (23.0) + .1008539 (26.4) -.091018 (29.3) - 7.452285. The resulting $\underline{D}$ is -.59987 and this is the group centroid for the bottom group. The group centroid for the top group is +.59987. Now, suppose an individual has a Motivation score of 32, a Self Testing Strategy score of 23, a Test Strategies score of 28, and an Attitude score of 33. These scores would be placed in the function as follows: $\underline{D}$ =.21 (31) + .06 (23) + .10 (28) - .09 (33) - 7.45. This freshman's resulting $\underline{D}$ is .27. Since .27 is closest to the group centroid of +.59987, this individual would be classified in the top group (Lachenbruch, 1975).

When used to classify the freshmen into their respective groups, this function performed with 75.61% accuracy. Thus, of the 41 freshmen who actually fell in

the bottom third of the class, 31 of them were correctly placed by the function. Of the 41 freshmen who actually fell in the top third of the class, 31 of them were correctly placed as well. Although the same number were correctly classified in this analysis, it is not necessary for the two groups to have the same number of correctly placed freshmen. Since every student would have a 50% probability of being placed into the correct group by chance alone, this function was a 25.61% improvement over chance placement into either group. This was judged a moderately accurate placement rate, and the function was equally useful for predicting placement of students in the top third as for those in the bottom third.

According to Klecka (1980), it is possible to "name" the function based on the structure coefficients. A structure coefficient is a simple linear correlation between an individual variable and the overall function. Following are the structure coefficients for this function: Motivation (.88), Attitude (.64), Test Strategies (.61), Selecting Main Ideas (.60), Self Testing (.53), Concentration (.52), Time Management (.45), Information Processing (.39), and Anxiety (.15). Variables with coefficients of .30 and higher are generally used in naming the process which discriminates the groups. Because so many of the variables had such high structure coefficients, the most appropriate "name" for this function might be

LASSI. Whereas there were only four variables in the function itself, the function was related to eight of the nine variables available (Study Aids was deleted to solve the group covariance problem). It is possible that this is occurring due to the strong intercorrelations of the 10 LASSI subscales.

In addition to the discriminant function, the discriminant analysis also produces a canonical correlation coefficient. This single value ranges from 0.0 to +1.0 and summarizes the strength of the relationship between the groups and the discriminant function. A correlation close to 1.0 indicates a strong relationship between the groups and the function while a correlation of 0.0 indicates no relationship at all. The canonical correlation for the analysis using the 10 learning strategies was .52. This is considered a moderate relationship between the function and the two academic groups of freshmen. When this correlation is squared, it produces the proportion of variability in the function that is explained by the groups. Thus, 27% of the variability within this function representing learning strategies can be explained by knowing about group placement.

Demographic Variables. In the analysis using only the demographic variables, the variable of prior college experience was deleted in order to meet the assumption of

approximate group covariance equality. The following

function was derived:

> D = 1.26 (Gender) + .34 (Age) + 2.13 (Student
> Marital Status) -1.24 (BTh Program) - .31
> (Years of Christian Experience) -1.27
> (Church) + .78 (Mothers Education) + .91
> (Fathers Education) - 1.33 (Grew up in home
> culture) - .79 (Homeschooling) - .48 (Type of
> High School attended) + 1.07.

The standardized coefficients of the variables in the

function were:

> Student Marital Status (.84)
> Gender (.61)
> Church (.57)
> Father's Education (.43)
> Age (.41)
> Home Culture (.39)
> Mother's Education (.38)
> BTh Program (.37)
> Homeschooling (.27)
> Years of Christian Experience (.23)
> Type of High School Attended (.22)

Marital Status had the largest standardized score;

therefore, it is the most distinctive demographic

characteristic in contributing to the function which

distinguishes the freshmen in the bottom third of the class

from those in the top third of the class. Gender and

attending church as a family are also relatively strong

contributors.

When this function was used to classify the freshmen

into the two groups, it did so with 81.71% accuracy. Of

the 41 students who actually were in the bottom third of

the freshman class, 32 (78%) were placed in that group

using the discriminant function. Of the 41 who actually were in the top third of the class, 35 (85.4%) were placed in that group by the discriminant function. This was judged a moderately accurate placement rate, and the function was more useful for placing students into the top third than the bottom. In addition, it was slightly more accurate (6.1%) than the function using only the learning strategies for placement of students into either of the two groups.

There was only one variable with a structure coefficient greater than .30 for this function: Marital Status (.32). This would indicate that although the function is moderately accurate at group placement, there is relatively little interaction of the demographic variables occurring, and it is not possible to name this function.

The canonical correlation was .67, representing a moderate relationship between the function and the two groups. By squaring the correlation, 45% of the variability in the function is explained by knowing about group placement.

Learning Strategies and Demographic Variables. The third analysis was done using both the 10 LASSI variables and the 21 demographic characteristics. The following function was derived:

D = .83 (Gender) + 2.05 (Student Marital Status)
     - .68 (BTh Program) + 1.01 (Holidays) - .54
     (Church) + 1.04 (Mother's Education) + .76
     (Father's Education) - 1.2 (Student grew up
     in home culture) - .74 (Canadian HS
     Curriculum) - .89 (Type of HS Attended) + .37
     (Size of graduating class) + .10 (Motivation)
     + .09 (Anxiety Control) + .06 (Study Aids) -
     9.39.

The standardized coefficients were:

        Student Marital Status (.81)
        Control of Anxiety (.55)
        Mother's Education (.51)
        Motivation (.48)
        Gender (.40)
        Homeschooling (.40)
        Type of High School Attended (.40)
        Size of Graduating Class (.35)
        Holiday (.36)
        Home culture (.36)
        Father's Education (.36)
        Canadian HS Curriculum (.35)
        Use of Study Aids (.30)
        Church (.24)
        BTh Program (.20)

Marital Status of the student was again the characteristic

which best distinguished freshmen in the bottom third of

the class from freshmen in the top third of the class.

When this function was used to classify the freshmen

into the two groups, it did so with 87.8% accuracy. Of the

41 students who actually fell in the bottom third of the

class, 35 (85.4%) were placed correctly. Of the 41 who

actually fell in the top third of the class, 37 (90.2%)

were placed correctly. The combination of demographic

characteristics and learning strategies was judged as a

fairly accurate placement of the students into the two

groups with the function being most useful in placing students into the top third.

There were four variable with structure coefficients greater than .30 for this function: Motivation (.46), Attitude (.40), Test Strategies (.37), and Selecting Main Ideas (.36). This is consistent with the last two analyses in which there was high interaction among the LASSI variables and relatively little interaction among the demographic variables. A possible name for this function is Focused Direction. The successful freshmen at PBC are those students who have the ability to sift the essential ideas and course material from the non-essential. They also have the inner drive to do what is necessary to accomplish both the short-term and long-term academic goals they have set.

The canonical correlation for this function was .77. This is considered a fairly strong relationship between the function and the two groups with 59% of the variability in the function representing both demographic characteristics and learning strategies explained by knowing about group placement. This function was 12.2% more accurate in placing students than the function which used only the learning strategies, and 6.1% more accurate than the function which used only the demographic variables.

Comparison of Top and Bottom
15.6% of the Class

The grouping of top and bottom thirds of the freshman class provides a comparison of a large group of students. However, prediction of GPA is usually desired for more extreme academic cases than just the top and bottom thirds of an entire class. Therefore, an additional grouping of the students was made using the 38 students who fell in the top and bottom 15.6% of the class. This percentage was chosen for two reasons. First, 15.6% roughly corresponds to groups more than one standard deviation from the mean in a normal curve. Second, the bottom 15.6% contains those students who earned less than a 2.00 for their first semester GPA. The 19 students in this group had serious academic difficulties. To be able to classify with relative accuracy the freshmen which will fall into this group would provide teachers and administrators an opportunity to take precautionary measures such as extra academic guidance and counselling.

Learning Strategies. In the analysis using the 10 LASSI variables, the Test Strategies variable was deleted in order to meet the assumption of approximate group covariance equality. The following function was derived:

$$D = .12 \text{ (Motivation)} + .10 \text{ (Anxiety)} + .13 \text{ (Selecting Main Ideas)} - 8.29.$$

The three standardized coefficients were:

>Anxiety (.53)
>Motivation (.49)
>Selecting Main Ideas (.39)

Anxiety Control was the most distinctive learning strategy which distinguished the bottom 15.6% of the class from the top 15.6% of the class. When this function was used to classify the freshmen into the two groups, it was 76.32% accurate. Of the 19 students who actually fell in the bottom 15.6% of the class, 14 (73.7%) were placed correctly. Of the 19 students who actually fell in the top 15.6% of the class, 15 (78.9%) were placed correctly. Learning strategies had a very similar placement rate between the groups of top and bottom thirds and the groups of the top and bottom 15.6%.

Following are the structure coefficients for this function: Attitude (.81), Selecting Main Ideas (.77), Motivation (.72), Concentration (.69), Anxiety (.65), Time Management (.57), Self Testing (.37), Information Processing (.18), and Study Aids (.01). Again, so many of the variables had such high structure coefficients that the most appropriate "name" for this function might be LASSI. There were only three variables in the function itself, and yet the discriminating process which the function represents was related to seven of the nine variables available (Test Strategies was deleted to solve the group covariance problem). The canonical correlation for this function was .56, representing a moderate relationship

between the function and the two groups and explaining 31%
of the variability in the function representing learning
strategies.

Demographic Variables. In the second analysis using
only the demographic variables for these 38 students, the
following function was derived:

D = 1.25 (Gender) + 2.63 (Student Marital Status)
- .96 (Program) - .69 (Church) + 1.06
(Father's Education) + 1.53 (English) - .88
(Type of High School) + .32 (Size of
graduating class) - 5.40.

The standardized coefficients were:

Student Marital Status (1.05)
Gender (.62)
Father's Education (.51)
English (.47)
Type of High School (.42)
Church (.30)
Size of graduating class (.30)
Program (.30)

As with the grouping by thirds, Marital Status was the
still the strongest demographic characteristic which
distinguished the bottom 15.6% of the class from the top
15.6% of the class. In fact, Marital Status was nearly
twice as strong as any other discriminating variable. When
this function was used to classify the freshmen into the
two groups, it did so with 92.11% accuracy. Of the 19
students who actually fell in the bottom 15.6% of the
class, 18 (94.7%) were placed correctly. Of the 19 who
actually fell in the top 15.6% of the class, 17 (89.5%)

were placed correctly. This was judged as a very accurate placement rate.

There were three variables with structure coefficients above .30: Marital Status (.50), Prior College Experience (.42), and Size of Graduating Class (.37). A possible name for this function is Broader Experience. The successful freshmen at PBC are those students who have experienced more of life and who have met with a greater diversity of opportunities and people. The canonical correlation for the analysis using the demographic variable was .74. This moderately strong relationship explains 54% of the variability within the function representing the demographic variables by knowledge of group placement.

Learning Strategies and Demographic Variables. In the final analysis using both the demographic characteristics and the LASSI variables, the Test Strategies variable was deleted in order to meet the assumption of approximate group covariance equality. The following function was derived:

D = 2.98 (Student Marital Status) + 1.35 (Holiday) + 1.91 (Father's Education) + 1.81 (English as native language) - 1.66 (Type of HS Attended) + .73 (Size of graduating Class) +.30 (Motivation) - .12 (Time Management) + .17 (Control of Anxiety) - .11 (Concentration) + .24 (Study Aids) - .15 (Self-Testing) - 19.38.

The standardized coefficients were:

        Study Aids (1.28)
        Motivation (1.21)
        Student Marital Status (1.18)
        Father's Education (.92)
        Anxiety Control (.90)
        Type of HS (.79)
        Self-Testing (.76)
        Size of Graduating Class (.69)
        Time Management (.68)
        English as native language (.56)
        Holiday (.51)
        Concentration (.51)

The use of Study Aids, Motivation, and Marital Status were

the most distinctive characteristics which distinguished

the bottom 15.6% of the class from the top 15.6% of the

class. Father's education and Anxiety Control were also

fairly discriminating characteristics.

When this function was used to classify the freshmen

into the two groups, it was 97.37% accurate. Of the 19

students who actually fell in the bottom 15.6% of the

class, all 19 (100%) were placed correctly. Of the 19 who

actually fell in the top 15.6% of the class, 18 (94.7%)

were placed correctly. The combination of demographic

characteristics and learning strategies was judged as a

very accurate placement of the students into the two

groups.

There were three variables with structure coefficients

at or above .30: Attitude (.41), Marital Status (.32), and

Selecting Main Ideas (.30). A possible name for this

function is Capable Maturity. This function indicates that

the successful freshmen at PBC are the more mature students

who have made the commitment to learn and are academically able to carry out this commitment. The canonical correlation was .86, representing a strong relationship between the function and the two groups and explaining 74% of the variability in the function representing both demographic characteristics and learning strategies.

This function was 21.1% more accurate in placing students than the function which used only the learning strategies, and 5.3% more accurate than the function which used only the demographic variables.

CHAPTER 5

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

The impact of selected demographic characteristics and use of 10 learning strategies upon first semester GPA was examined among 122 freshmen at Prairie Bible College. Eight research questions were addressed in this study, and these questions are answered in summary form in this chapter.

Demographic Characteristics

What are the demographic characteristics of the freshmen at Prairie Bible College?

Summary

PBC has more male than female freshmen. If male, he was likely to be 21 years of age or older. If female, she was likely to be 17-18 years of age. Most freshmen were single though a married freshman would probably be male. The females were much less likely to have prior college experience than the males. Females were unlikely to be in BTh or AARS-aviation programs and were much more likely to begin college without a declared major. Even though the females tended to be younger than males, they were more likely to have been Christians for at least 11 years. The

male freshmen were much more likely to be planning on FTCS
than the female freshmen.

Freshmen of both genders are very likely to have been
raised in their home culture and to speak English as their
native language. Their parents, who are most likely still
alive and married to each other, are probably Christians.
Both their parents are likely to have attended college
though not necessarily to have graduated. Their families
are probably viewed as middle-class with an estimated
annual income between $10,000-$40,000 (Canadian). While
growing up, their families usually attended church and
spent holidays together. They are very likely to have
graduated from a public high school with a graduating class
between 26 and 500 students.

Conclusion

The freshmen fell on a continuum of characteristics.
At one extreme was the young, single female student who was
raised in a stable home with Christian parents and who is
probably still uncertain as to her future plans. At the
other end of the continuum is the older, married male whose
parents may or may not be Christians and who is very likely
to be planning on FTCS. The latter seem typical of adult
learners in that they are more mature, more focused, and
more goal-oriented.

Comparative Use of Learning Strategies

Do the PBC freshmen differ from the norms
established for other college freshmen in their
use of learning strategies?

Summary

The freshmen at PBC were quite similar to the freshmen

at the University of Texas (UT) and to the freshmen at

Murray University in their use of learning strategies. The

PBC freshmen were somewhat less proficient than the

freshmen at the "high selectivity" UT and somewhat more

proficient than the freshmen at the "low selectivity"

Murray University. When compared to the UT freshmen, the

PBC freshmen were weakest in the Self-Testing strategies

and strongest in the Concentration strategies. When

compared to the freshmen at Murray University, the PBC

freshmen were weakest in the Self-Testing strategies and

strongest in the Anxiety Control strategies.

Although the LASSI User's Manual (1987) provides

normative data referred to as "national norms," it is in

fact an inaccurate claim. These norms were based solely

upon 880 freshmen attending UT. The study done at Murray

University was the only other research that could be

located which reported the individual scale score averages.

Because of the lack of true national norms, it was not

possible to compare the PBC freshmen to "other college

freshmen."

Conclusion

Research has shown that Bible college freshmen differ from freshmen at other colleges in areas such as personal objectives and vocational goals. With regard to the use of learning strategies, however, the students who are attracted to Prairie Bible College are quite similar to the freshmen attending UT and Murray University.

Use of Learning Strategies Among Successful Freshmen

> To what degree are different types of learning
> strategies used by the successful students?

Summary

The freshman class was divided into thirds according to first semester GPA. The 41 students with the highest GPAs were considered the academically successful students. The successful freshmen were likely to use all 10 learning strategies more frequently than the average PBC freshman. Using the LASSI norms as a reference, the successful freshmen made the best use of Study Aids and the poorest use of Anxiety control strategies. When compared to the average PBC freshman, the successful students were most different in their use of Motivation as a strategy and the most similar in their use of Anxiety control as a strategy. None of these students were among the weakest strategy users at PBC; however, some of the academically average freshmen made more frequent use of individual strategies.

Conclusion

Motivation appears to be the primary learning strategy related to academic success at PBC. However, the successful students are not remarkably better at motivational strategies or any other individual strategy, rather they are relatively proficient with all 10 of the strategies.

Use of Learning Strategies Among Less Successful Freshmen

To what degree are different types of learning strategies used by the less successful students?

Summary

The 41 freshmen with the lowest first semester GPAs were considered the less successful freshmen. These students were likely to use all 10 strategies less frequently than the average PBC freshman. They made the poorest relative use of the Motivation as a strategy when compared to either the LASSI norms or the average PBC freshman. They were the most similar to average PBC freshmen in their use of Anxiety control strategies. Their range of strategy use was wider than the range among the most successful freshmen. Whereas some of the students in this group were the weakest strategy users at PBC, there were students in this group who were relatively proficient at one or more of the strategies.

Conclusion

Just as Motivation appears to be the primary learning strategy related to academic success at PBC, so the lack of Motivation appears to be the primary characteristic of the less successful students. In addition, the less successful students are generally less proficient in the use of all 10 strategies although a few of these students may be very proficient at one or more of the strategies. Extreme strength or weakness in individual strategies does not seem as indicative of academic achievement as overall proficiency among all the strategies.

Strategy Use and Grade-Point Average

> What is the relationship between the use of
> learning strategies and academic success as
> measure by GPA?

Summary

The freshman class was divided approximately into thirds according to the learning strategy scores on each of the 10 LASSI scales. The 35 to 45 students who made the most frequent use of a strategy were considered the high strategy users for that strategy. The 35 to 45 students who made the least use of a strategy were considered the low strategy users for that strategy. Use of learning strategies was positively related to GPA among the PBC freshmen. The average GPA was calculated for the two

groups of high and low strategy users on each of the 10

strategies. For every strategy scale, the high strategy

users had an average GPA of at least a 3.00. For every

strategy scale, the low strategy users had an average GPA

below 2.67. For example, the average GPA of the 35

students who used Motivational strategies most frequently

was 3.17; the average GPA of the 40 students who used

Motivational strategies least often was 2.47.

Conclusion

There is a mutual relationship between frequent use of

learning strategies and academic success at PBC. Not only

are the most successful freshmen making frequent use of

learning strategies, the students who are making frequent

use of the strategies are getting good grades. These

students are not only proficient in academics in general,

but they are proficient in the use of learning strategies

as well. If this relationship did not exist, then it would

be possible for the students who were not academically

proficient to be making frequent use of certain learning

strategies. This was not the case. The freshmen who were

proficient in the learning strategies were averaging at

least a 3.00 GPA.

One caution should be made. In this study, the

"average" student was examined rather than the individual

student. There were a few students who received high

grades and did not make frequent use of the learning strategies. There were a few students who made frequent use of learning strategies and did not receive high grades. However, these students were rare. Their marks were included in all computations, and yet the strong relationship between learning strategies and academic success remained apparent.

Demographic Variables and Grade-Point Average

To what degree are select demographic factors related to GPA?

Summary

The freshmen most likely to receive a GPA of at least a 3.0 were females, married students, students over 25 years of age, and students with prior college experience. The freshmen most likely to receive a GPA below 2.70 were single students, students 19-24 years of age, students from upper-class families, students whose fathers did not attend college, American students, and students from high schools with graduating classes of less than 26 students.

Conclusion

There was a relationship between the demographic variables and GPA. Certain types of freshmen were more likely to have academic success than other types of freshmen.

Demographic Variables and Learning Strategies

Is there a relationship between the demographic
factors and the choice of learning strategies?

Summary

Males were most proficient at Anxiety Control as a
strategy and females were most proficient at Study Aids as
a strategy. The 17-18 year olds, who are mostly female,
are also the most frequent users of Study Aid strategies.
The students over 30 years of age were the most frequent
users of Time Management, Concentration, Information
Processing, Selecting Main Ideas, Self Testing, and Test
Strategies. The Canadian freshmen were most proficient at
Concentration strategies. The freshmen with some prior
college experience were most proficient at 8 of the 10
strategies: Attitude, Time Management, Anxiety Control,
Concentration, Information Processing, Selecting Main
Ideas, Self Testing, and Test Strategies.

Conclusion

There was a relationship between demographic factors
and choice of learning strategies. Specific types of
students were likely to make more frequent use of certain
types of learning strategies. Proficiency with learning
strategies appears to develop with age.

Discriminating Between Most Successful and Least Successful Freshmen

Can demographic factors, learning strategies, or a combination of the two discriminate between the most successful freshmen and the least successful freshmen?

Summary

Both the demographic variables and the learning strategies were able to discriminate between these two groups of freshmen with a minimum accuracy of 76%. In addition, the combination of both demographic factors and learning strategies provided increased accuracy in discrimination. When these two characteristics were combined to discriminate between the students who fell in the top and bottom thirds of the freshmen class, the accuracy level was 88%. When the two characteristics were combined to discriminate between the freshmen who fell in the top and bottom 15.6% of the class, the level of accuracy increased to 97%.

The learning strategies most useful in discriminating between the two groups of freshmen were Motivation, Study Aids, and Test Strategies. The demographic factors most useful in discriminating between the two groups were Gender, Marital Status, Academic Program, and Fathers Education.

<u>Conclusion</u>

It is possible to discriminate between the successful
and the less successful freshmen by knowledge of
demographic variables and learning strategy use. Either
source is useful in classifying the freshmen into groups
although the combination of the two sources proved most
efficient.

If PBC should decide to use this study to predict the
academic success of future freshmen, the relative
contribution of the LASSI instrument to the discriminant
function should be weighted in light of the administration
costs of the LASSI. The combination of demographic
variables and learning strategies did result in a very high
classification ability. However, the demographic variables
alone were able to classify students into the top and
bottom thirds with 82% accuracy and into the top and bottom
15.6% with 90% accuracy. The addition of the learning
strategies raised the classification accuracy to 88% and
95% respectively. Although the LASSI may be very effective
as an individual counselling tool or as a pre- post-test
measure for a learning strategies course, it is probably
not cost effective to administer the LASSI to all incoming
freshmen in order increase classification accuracy by only
5 or 6%.

Thirteen variables were needed for the two demographic
discriminant functions and could be collected during the

registration process. These variables were: Gender, Age, Marital status, Program, Father's Education, Mother's Education, Years of Christian Experience, Church, English, Home Culture, Homeschooling, Type of High School Attended, and Size of Graduating Class.

Recommendations

1. Caution should be used in interpreting the results of this study. Finding a correlation between two variables does not mean that a change in one variable will cause the other variable to change. Nevertheless, one can examine correlations between learning strategies and GPA with the hope that if a positive relationship is found, there is the possibility that increased use of that strategy will improve GPA. Examining the correlations between demographic variables and GPA offers no such hope. If the students whose fathers possess college degrees have higher GPA's than those whose fathers did not attend college, there is no possibility of moving a student from the latter group to the former group in order to improve their academic standing.

The results of this investigation should in no way be interpreted as evidence that academic success depends upon the demographic characteristics of a student or that teaching the less successful students to use certain learning strategies will necessarily improve their grades.

What has been revealed is that patterns do exist. Certain
types of students are prone to academic success, other
types of students are likely to be less successful--even to
the point of academic failure. Whereas learning strategies
can be acquired, it was not the purpose of this study to
determine whether academic success is dependent upon the
use of learning strategies. The successful freshmen at PBC
did tend to make more frequent use of the 10 learning
strategies included in this study. The less successful
freshmen tended to make less frequent use of the 10
strategies. It is hoped that an awareness of the existing
patterns will prove helpful for both teachers and students.

2. It is recommended that future researchers of
learning strategies be aware of several problems
encountered with the LASSI. First, the inaccurate claim to
national norms. Ideally, Weinstein should establish
national norms. Since LASSI is being used by approximately
44% of all U.S. colleges and universities, Weinstein is in
an ideal situation to collect data from these schools and
establish truly national norms. Until that occurs however,
researchers who desire to compare their students to
national norms should realize that this will be not be
possible from the norms currently provided with the LASSI.
Second, the lack of documentation regarding construct and
criterion-related validity makes the instrument of unknown
value to those whose research requires evidence of

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validity. Finally, there is the possibility that the LASSI
does not truly measure 10 discrete learning strategies.
There appeared to be a great deal of overlap between 10
scales among the PBC freshmen. Again, it is hoped that
Weinstein will provide inter-correlations of the scales on
the normative data, but until then researchers should be
aware that several of the scales may be measuring the same
skills.

3. This study found that demographic factors and the
use of learning strategies could be used to classify
freshmen into more and less academically successful groups
with a high level of accuracy. However, this was a
descriptive study, and if the discriminant function is used
to predict the academic success of future freshmen, it
should be tested using a new group of freshmen to verify
the classification accuracy. It may also be possible to
use this information to predict student retention patterns,
and this variable could be included in a longitudinal
study. Future studies could explore possible causes of the
relationships among strategy use, demographic
characteristics, and academic success revealed in this
study.

4. Faculty at PBC should be aware that certain types
of freshmen will be more likely to be academically
successful than other types of freshmen. Of course, this
awareness should not lead to a "stereotyping" of students,

but rather it could provide teachers with the opportunity to prepare for possible academic obstacles or difficulties.

5. Administrators could use this information while planning faculty advising schedules or to target special programs for certain types of freshmen. For example, those freshmen whose demographic and learning strategy characteristics indicate that they may experience academic difficulties could be given special academic counseling or receive additional monitoring by their advisor throughout the term.

6. Whereas this study has shown that it is possible to predict the PBC freshmen who are likely to have academic difficulties, other studies have indicated that academic achievement can be increased through instruction in learning strategies. Therefore, PBC may find it beneficial to begin a provisional course in the use of learning and study strategies. The college would need to monitor the academic achievement of the participants to determine whether increased use of learning strategies would result in increased academic success for their students. Since the students 25 years of age and older are already relatively proficient in their use of learning strategies, the course should be targeted at the younger freshmen, especially the 19-24 year olds. An emphasis should be placed on Time Management strategies which was the weakest area for the younger freshmen.

7.   Since the married students are doing so well academically, PBC may want to look into other types of support systems for these students. These could include job placement services or family-based activities.

8.   Although national norms were not available, this study revealed that the PBC freshmen were very similar in their use of learning strategies to two American universities. Therefore, it is recommended that Bible college faculty and administrators continue to read and apply current research in the field of learning strategies to their own students.

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APPENDICES

APPENDIX A

DEMOGRAPHIC SURVEY

GENERAL INFORMATION - Please choose the response that best describes you.

78) Gender: a) male   (70)   b) female   (52)

79) Age: a) 17-18   (48)   b) 19-20   (28)
               c) 21   (5)   d) 22   (3)
               e) 23-24   (5)   ab) 25-29   (11)
               ac) 30-39 (18)   ad) 40 or over (4)

80) Marital status:
    a) single, never married (99)
    b) single, previously married (0)
    c) married, never divorced or widowed (17)
    d) married, previously divorced or widowed (6)

81) Program currently enrolled in:
    a) BTh (12)   b) BAIS (4)   c) BASM (3)
    d) BRE (24)   e) BMin (10) ab) AARS-Aviation (12)
    ac) AARS-nonaviation (21)   ad) 3 yr diploma (2)
    ae) CBS (15) bc) undeclared (19)

82) How many years have you been a Christian?
    a) 0-1 (2)   b) 2-5 (16)
    c) 6-10 (24)   d) 11 or more (80)
    e) not sure I am a Christian (0)

83) Did you grow up in a Christian home?
    a) both parents Christians (96)
    b) one parent Christian (9)
    c) no (17)

84) What is your parents marital status?
    a) married (99)
    b) at least one divorced and remarried (5)
    c) divorced (2)
    d) one or more deceased (13)
    e) other (3)

85) Are (or were) your parents employed in full-time
    Christian service?   a) yes (35)   b) no (87)

86) Do you plan on going into full-time Christian service?
          a) yes (68)   b) no (11)   c) unsure (43)

87) As you were growing up, did your family usually spend
    holidays together?   a) yes (104)   b) no (18)

88) As you were growing up, did your family usually attend
    church together?   a) yes (92)   b) no (29)

89) As you were growing up, to which social class would you estimate your family belonged?
    a) lower-lower (3)   b) middle-lower (33)
    c) upper-lower (6)   d) lower-middle (15)
    e) middle-middle (32)   ab) upper-middle (17)
   ac) lower-upper (2)   ad) middle-upper (11)
   ae) upper-upper (1)

90) In Canadian currency, what would you estimate your parents annual income to be?
    a) under 10,000   (11)   b) 10,000-19,999 (19)
    c) 20,000-29,999 (22)   d) 30,000-39,999 (17)
    e) 40,000-49,999 (15) ab) 50,000-59,999 (11)
   ac) 60,000-69,999 (7) ad) 70,000-79,999 (6)
   ae) over 80,000   (5)

91) What is your mother's highest educational attainment?
    a) did not graduate from HS (27)
    b) HS diploma/GED (25)
    c) some college (52)
    d) Bachelors degree (16)
    e) Masters or Doctorate (2)

92) What is your father's highest educational attainment?
    a) did not graduate from HS (30)
    b) HS diploma/GED (14)
    c) some college (39)
    d) Bachelors degree (27)
    e) Masters or Doctorate (12)

93) Is English your native language?
    a) yes (109)   b) no (13)

94) Did you spend the majority of your youth in your home culture?
    a) yes (111)   b) no (11)

95) Which curriculum was the majority of your schooling based upon?
    a) Canadian (83)
    b) United States (23)
    c) British (4)
    d) Other (10)

96) Have you been homeschooled for one or more grades?
    a) yes (16)
    b) no (skip to #100) (105)
    c) unsure (skip to #100) (1)

If yes to question (96), for which grades were you
homeschooled? Blacken as many circles as apply or leave
the entire question(s) blank:

97) a) Kindergarten (2) b) grade 1 (3)   c) grade 2 (2)
    d) grade 3 (4)   e) grade 4 (6)
98) a) grade 5 (6)   b) grade 6 (6)   c) grade 7 (2)
    d) grade 8 (2)   e) grade 9 (2)
99) a) grade 10 (2)   b) grade 11 (2)   c) grade 12 (0)

100) What Is your highest educational attainment?
        a) did not graduate from HS (3)
        b) HS diploma (89)
        c) GED (1)
        d) some college (21)
        e) college degree (5)

101) What type of High School did you graduate from?
        a) public HS (76)
        b) private secular HS (5)
        c) private Christian HS (30)
        d) Home school/correspondence (1)
        e) Other (5)
       ab) not applicable since I did not graduate (3)

102) How large was your High School graduating class?
        a) 1-25 (17)   b) 26-100 (39)
        c) 101-500 (51)   d) 501-1000 (5)
        e) over 1000 (1)   ab) unsure (3)
        ac) not applicable since I did not graduate (3)

Thank you for your patience and honesty, it is much
appreciated.

Note.   The number of students within each group is given in
        parentheses.

APPENDIX B

COVER LETTER TO LASSI AND DEMOGRAPHIC SURVEY

September 1993

Dear Bible College Students:

There is much research being done on incoming students at Universities and other secular colleges. This information allows those schools to understand their students and adjust their programs and services to best meet the needs of their students. As a former Bible college student who went on to teach at two other Bible colleges, I am interested in studying incoming Bible college students. In order to do this, I need you to fill out two surveys. The first is designed to gather information on your learning strategies and attitudes towards learning, the second is demographic and will provide a description of traits that might affect how you learn. At the end of this semester Prairie will attach your GPA to the surveys by using your student ID number. I will never know who you are so please answer as honestly and carefully as possible. I am looking for traits (or groups of traits) that lead to academic success and the data that these surveys provide will hopefully allow Prairie and other Bible colleges to better understand their future students. I need you to answer every question (all 101 of them!) and I hope you enjoy your first year at Bible college.

Sincerely,

Lynn Wallace

Explanation of choices in Part 1:
By **Not at all typical of me**, I do not necessarily mean that the statement would never describe you, but that it would be true of you only in rare instances.
By **Not very typical of me**, I mean that the statement generally would not be true of you.
By **Somewhat typical of me**, I mean that the statement would be true of you about half the time.
By **Fairly typical of me**, I mean that the statement would generally be true of you.
By **Very much typical of me**, I do not necessarily mean that the statement would always describe you, but that it would be true of you almost all the time.

Try to rate yourself according to how well the statement describes you, not in terms of how you think you should be or would like to be.

*Explanation taken from <u>Learning and Study Strategies Inventory</u>, Claire Weinstein, 1987.