The Effects of Learning Assistance on a Selected Group of Nursing Students

Bernice R. Metcalf

South Dakota State University

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THE EFFECTS OF LEARNING ASSISTANCE ON A
SELECTED GROUP OF NURSING STUDENTS

by

Bernice R. Metcalf

A thesis
submitted in partial fulfillment
of the requirements for the degree of
Master of Science, Major in Nursing
South Dakota State University
1983
THE EFFECTS OF LEARNING ASSISTANCE ON A
SELECTED GROUP OF NURSING STUDENTS

This thesis is approved as a creditable and independent investigation by a candidate for the degree Master of Science, and is acceptable for meeting the thesis requirements for this degree. Acceptance of this thesis does not imply that the conclusions reached by the candidate are necessarily the conclusions of the major department.

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THE EFFECTS OF LEARNING ASSISTANCE ON A SELECTED GROUP OF NURSING STUDENTS

Student: Bernice R. Metcalf

Type of Study Project _X_ Thesis

Area of Focus of Study

_X_ education

_clinical practice_

_patient care management_

__other__

Abstract (approximately 150 words)

The purpose of this study was to assess the effectiveness of learning assistance on the success of provisionally admitted students in an associate degree nursing program as evaluated by nursing course grades and State Board Test Pool Examination results. Knowles' Theory of Andragogy and a construct of Bloom's Mastery Learning served as the conceptual framework for the study.

The sample was 20 students provisionally admitted to an associate degree program in a state supported college in the Pacific Northwest. A quasi-experimental research design, using both non-equivalent control groups and a matched group, was utilized.

The study posed 15 null hypotheses regarding the use of the variables: learning assistance, informal learning assistance and formal learning assistance. Statistical computations utilized were percentage calculation, t test for non-independent samples and chi square. The study indicated no significant difference on State Board scores and mixed results on course grades. A serendipitous finding was the retention of 23 percent more provisionally admitted students when they received learning assistance.

I give my permission to the College of Nursing, SDSU to publish this abstract in a collection of abstracts from master's projects and theses.

Signature

Date
ACKNOWLEDGEMENTS

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Determination of Research Involvement
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Graduate Program
College of Nursing
South Dakota State University

Definition of Human Subjects
This term describes any individual who may be at risk as a consequence of participation as a subject in research, development, or related activities. Subjects may include patients; outpatients; donors of organs, tissues and services; and normal individuals, including students or others who are placed at risk during training in medical, psychological, sociological, educational, and other types of activities. Of particular concern and meriting special consideration are those subjects in groups with limited civil freedom. These include prisoners and residents of clients of institutions for the mentally ill and mentally retarded. Minors are also of particular concern. The unborn and the dead will be considered subjects only under conditions and to the extent permitted by law and regulation.

The proposed master's research project/thesis titled _____________________________ has been discussed regarding whether it involves human subjects. We (advisor and student) have determined that

A. (Check one)

X Human subjects are not involved because students were not identified.

B. (Check one)

The student will initiate contact with the University Human Subjects Committee and proceed according to established University guidelines.

X The student need not forward his/her proposal to the Human Subjects Committee.

cc: Advisor
Student
Dean of Nursing's Office
Graduate Program Office
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CHAPTER 1

Introduction to the Problem

This is a study to assess the effectiveness of providing learning assistance to students provisionally admitted to an associate degree nursing program. The first chapter includes an introduction, the purpose of the study, statement of the problem, the hypotheses, the significance of the problem and a definition of terms.

Introduction

While employed as a faculty member in an associate degree nursing program in a state supported college in the Pacific Northwest, the writer and other nursing faculty observed that provisionally admitted students encountered difficulties with cognitive skills such as reading, studying and mathematics. Approximately one-third of the provisionally admitted students, those not fully meeting the recommended admission criteria, dropped out of the program during the first semester of nursing study. The remaining two-thirds of the provisionally admitted students completed the program, but within that group approximately 50 percent failed the State Board Test Pool Examination. Malarkey (1979) has suggested that students who are encountering learning difficulties be identified and remediation begun early in the educational program.
Based on their own experience and the literature, the faculty planned a systematic program of learning assistance during the first year of the nursing program to ascertain if such a program would help provisionally admitted students experience success.

The writer believes that nursing faculty hold a key to the successful educational experience of adult nursing students. Yet, by and large, our higher education system has tended to accept a "sink or swim" philosophy. If students fail, faculty and administrators tend to accept none of the responsibility and the student is left alone to cope with the guilt (DeTornyay and Russell, 1978).

**Purpose of the Study**

The purpose of this study was to assess the effectiveness of learning assistance on the success of provisionally admitted students in an associate degree nursing program as evaluated by nursing course grades and State Board Test Pool Examination results.

**Hypotheses**

The first five null hypotheses deal with providing informal learning assistance to provisionally admitted students.

1. There will be no significant difference at the .05 level in the first semester nursing course grades between students provisionally admitted to an associate degree nursing class who receive informal learning assistance and students
unconditionally admitted to the same class.

2. There will be no significant difference at the .05 level in the second semester nursing course grades between students provisionally admitted to an associate degree nursing class who receive informal learning assistance and students unconditionally admitted to the same class.

3. There will be no significant difference at the .05 level in the third semester nursing course grades between students provisionally admitted to an associate degree nursing class who receive informal learning assistance and students unconditionally admitted to the same class.

4. There will be no significant difference at the .05 level in the fourth semester nursing course grades between students provisionally admitted to an associate degree nursing class who receive informal learning assistance and students unconditionally admitted to the same class.

5. There will be no significant difference at the .05 level in the successful completion of the State Board Test Pool Examination between students provisionally admitted to an associate degree nursing class who receive informal learning assistance and students unconditionally admitted to the same class.

Hypotheses six through ten deal with providing formal learning assistance to provisionally admitted students.

6. There will be no significant difference at the .05 level in the first semester nursing course grades between students provisionally admitted to an associate degree nursing class who receive formal learning assistance and students unconditionally admitted to the same class.

7. There will be no significant difference at the .05 level in the second semester nursing course grades between students provisionally admitted to an associate degree nursing class who receive formal learning assistance and students unconditionally admitted to the same class who do not receive formal learning assistance.
8. There will be no significant difference at the .05 level in the third semester nursing course grades between students provisionally admitted to an associate degree nursing class who receive formal learning assistance and students unconditionally admitted to the same class.

9. There will be no significant difference at the .05 level in the fourth semester nursing course grades between students provisionally admitted to an associate degree nursing class who receive formal learning assistance and students unconditionally admitted to the same class.

10. There will be no significant difference at the .05 level in the successful completion of the State Board Test Pool Examination between students provisionally admitted to an associate degree nursing class who receive formal learning assistance and students unconditionally admitted to the same class.

Hypotheses eleven through fourteen deal with providing formal versus informal learning assistance.

11. There will be no significant difference at the .05 level in the first semester nursing course grades between students provisionally admitted to an associate degree nursing program who receive informal learning assistance and students provisionally admitted to the same program who receive formal learning assistance.

12. There will be no significant difference at the .05 level in the second semester nursing course grades between students provisionally admitted to an associate degree nursing program who receive informal learning assistance and students provisionally admitted to the same program who receive formal learning assistance.

13. There will be no significant difference at the .05 level in the third semester nursing course grades between students provisionally admitted to an associate degree nursing program who receive informal learning assistance and students provisionally admitted to the same program who receive formal learning assistance.
14. There will be no significant difference at the .05 level in the fourth semester nursing course grades between students provisionally admitted to an associate degree nursing program who receive informal learning assistance and students provisionally admitted to the same program who receive formal learning assistance.

Hypothesis fifteen deals with providing learning assistance, informal or formal, versus no learning assistance.

15. There will be no significant difference at the .05 level in the successful completion of the State Board Test Pool Examination between students provisionally admitted to an associate degree nursing program who receive learning assistance, formal or informal, and students provisionally admitted to the same program who do not receive learning assistance.

Significance of the Problem

Learning assistance in study skills, counseling, mathematics and use of support groups may help retain and graduate students who are provisionally admitted to associate degree nursing programs. Retention of students in nursing programs has become a growing concern of college administrators. Many of the nursing programs in the nation have a sequential approach to progression through the curriculum (Hutchinson et al., 1973). When a student leaves a program there is no method by which other students can enter at an advanced level. This results in wastage of student and institutional time and money (Weinstein et al., 1980). Learning assistance in cognitive skills, counseling and the use of support groups may help students experience success and thus remain in programs. If a relationship of providing
learning assistance to retention and graduation can be discerned, then ways to retain students may be instituted.

**Definition of Terms**

1. **Adult Learners.** Persons whose major social roles are characteristic of mature status undertaking systematic and sustained learning activities for the purpose of bringing about changes in knowledge, attitudes, values or skills (Darkenwald and Merriam, 1982).

2. **Associate Degree Nursing Program.** Form of higher education for nursing administered by institutions of higher learning: community colleges, senior colleges and universities. Upon completion graduates are eligible to take the state licensing examination for registered nurses; usual length of study is 18 academic months (Kaiser, 1975).

3. **First Seven Months.** Initial 32 weeks of the nursing curriculum which occurs after one semester of general college courses.

4. **Nursing Course Grades.** Arbitrary guidelines established by the department of nursing. Minimal grade for progression into the next nursing course is a grade of "C."

5. **Learning Assistance.** Those formal or informal educational enrichment activities for the purpose of augmenting cognitive, affective and/or psychomotor skills to promote mastery of a subject.

   A. **Formal Learning Assistance.** Educational enrichment activities utilizing a teacher-centered approach.
Instruction format is orderly, logical, structured activities directed toward rational, specific, analytical goals. Usually occurs in large group classroom setting (Rosenshire, 1979).

B. Informal Learning Assistance. Educational enrichment activities utilizing a student-centered approach. Instruction format is relaxed, casual, unstructured activities encouraging variety in strategies and integration of curriculum areas directed toward individual goals. This occurs in small groups or one-to-one interaction (Horwitz, 1979).

6. Learning Assistance Content Areas. Educational enrichment activities including but not limited to:

A. Dosage computation
B. Psychomotor skills practice
C. Study skills
D. Test-taking skills and test review
E. Values clarification
F. Discussion of role change
G. Program operational issues
H. Nursing process clarification

7. Mastery Learning. An instructional expectation that most students can reach a designated level of achievement. It is the task of the instructor to provide the vehicle to make this possible (Armstrong et al., 1978).

8. Provisionally Admitted Students. Those individ-
uals enrolling in the first semester of the nursing sequence who did not unconditionally meet the entrance requirements of the school under study.

9. State Board Test Pool Examination.* Nationally standardized examination, used at the completion of nursing programs by all registered nurse licensing jurisdictions in the United States, designed to measure safe and effective preparation for administering nursing care. While the same content areas were being tested, the name of this examination was changed to National Council Licensing Examination in 1982 when the format was changed from measuring five discrete areas—medical, surgical, obstetrics, psychiatric and care of children—to an integrated examination testing the same five areas. A substantial increase in passing and failing rates is not expected (Council of State Boards of Nursing, 1980).

10. Successful Performance. Achieving a minimum passing score on the State Board Test Pool Examination/National Council Licensing Examination as determined by the Council of State Boards of Nursing.

*For the purpose of this study, the qualifying examination will be referred to as the State Board Test Pool Examination.
CHAPTER 2
Review of Literature

This chapter presents a selected review of the literature in the areas of learning assistance for adults and formal versus informal learning assistance. The conceptual framework for the study is included.

Learning Assistance for Adults

The literature indicated that adult learning is a complex phenomenon. While it shares commonalities with childhood learning, there are substantial differences that necessitate approaching adult students differently from children (Darkenwald and Merriam, 1982). "Adults seldom learn, remember and use answers for which they do not already have the question" (Andrews, 1981).

In his work, Motivation and Personality, Maslow (1954) identified the goal of education as self-actualization. Fulfilling this highest order need enables people to become the best they can become. He believes education should assist one in the discovery of an identity as well as in the discovery of a vocation.

Similar to Maslow's self-actualized person is the fully functioning person identified by Rogers (1969). Rogers describes learning as the process of striving to become a fully functioning person. Rogers purports some measure of
independence and self responsibility to being an adult. He believes that as a result adult students are capable of participating in the structuring of their learning.

Participation in adult education has grown rapidly in the past 20 years. This has stimulated researchers and theorists to identify why and how adults learn. Various terms have been used to characterize the adult learner: self-directed (Thompson, 1970; McLagen, 1975), productive (Tough, 1971), goal oriented (Tarnow, 1979) and practical (Johnstone and Rivera, 1965).

Cross (1974) found that older students are highly motivated. They demonstrate maturity in the decision making process and a vast array of knowledge gained through life experiences. However, they also bring to the educational setting unresolved fears, conflicts and needs that hinder learning (Malarkey, 1979). Adult learners often express fear of failure and strong feelings about their ability to learn (Bloom, 1976; Brandenberg, 1974).

Many adult students never reached their academic potential while in high school; consequently, they feel unable to do college level work (Cross, 1974). DeWolff (1974) states that the student who fails in college is generally the student who has underachieved for a long time, whose self-concept in academic situations tends to be negative and who has serious problems formulating goals.
If the potentially unsuccessful student is identified early in the educational process, as were the provisionally admitted students in this study, the necessary counseling and remediation could take place (Rose, 1965). DeTornyay and Russell (1978) found that early success provides feedback to students that they can succeed and prohibits the societal label of "failure." Success at one level of schooling can lead to success at subsequent levels of learning.

Knowles (1970) greatly expanded the body of knowledge about how adults learn. He applied the label andragogy, the art and science of helping adults learn, as opposed to pedagogy, helping children learn. He described adults as persons growing in self-awareness with an identity derived from their experiences. Adults expect to rely on their experiences and abilities as they engage in learning activities and seem to prefer process approaches rather than content approaches (Andrews, 1981).

Knowles (1968) postulates that adult learning programs should focus on task orientation and should emphasize accuracy in learning tasks. This is reinforced by Knox (1977) when he says, "There is a tendency during adulthood for greater task orientation and for a set of expectancy that emphasizes learning tasks." Effective use of time, accuracy and mastery of content are important to adults (Waterman, 1981).
Havinghurst (1973) writes "Adult development can be viewed as the interaction between tasks for different ages and the social role construct." Adult years mark the development in integration of cognitive and instrumental capacities that enable people to reach whatever heights of purposeful organized mastery of the world they are capable of reaching (Smelser, 1980).

Teaching/learning strategies designed on Bloom's theory of mastery learning bring students to a high level of achievement with increased self confidence (Block, 1977). Bloom (1978) found that "most students become similar in learning ability, rate of learning and motivation for further learning when provided with favorable learning conditions." He proposed group instruction be utilized supplemented with frequent feedback and individualized help. Research on mastery learning validates that 95 percent of the students can learn everything the schools have to teach and they can learn it at mastery level in as little as 10 to 15 percent more time.

Formal Versus Informal Learning Assistance

Due to the limited studies available in formal versus informal methods of instruction for adults, the researcher reviewed studies that applied these concepts to grade and high school level students. This helped the researcher in formulation of this problem. Recent work has shown that the findings do generalize to higher grade levels (Brophy, 1979).
A review of the literature on formal, or direct, versus informal, or open, instructional approach yielded conflicting results in regard to student outcomes. Horwitz (1979) reviewed 200 studies which compared educational outcomes of formal and informal classroom teaching. He found that students provided with formal instruction tended to do slightly better on achievement tests but they did slightly worse on tests of abstract thinking. Informal approaches excelled in improving students' attitudes toward school, the teacher and increasing students' independence and curiosity.

Research suggests that the effectiveness of formal and informal approaches to instruction depends on the students' locus of control. Wright and DuCette (1976) found that students who had internal locus of control achieved more with an informal approach. Students who had an external locus of control achieved equally well with a formal approach as with an informal approach.

Using 600 subjects in formal and informal classrooms Arlin (1975) studied the mediating effect of locus of control on the degree of pupil satisfaction. His findings showed that pupils with an internal locus of control were more satisfied with their teachers when informal approach was used. This trend was more pronounced for males than females.

Janicki (1979) found that students with an internal
locus of control achieved at higher levels with math problems if an informal instructional approach was used in which they were allowed to work in small groups and had some choice in activities. Conversely, students with an external locus of control achieved more when a formal instructional approach was used.

The literature revealed that effectiveness of formal or informal instruction also depends on the student's innate ability. Ward and Barcher (1975) in their study of 98 subjects reported that low ability students did not differ on reading achievement or creativity in formal or informal approaches. High ability students had significantly higher reading and figural creativity scores when a formal instructional approach was used. Bennett (1976) found that students with high prior achievement did better with formal approaches, but boys with low prior achievement did better with informal approaches.

Conversely, Solomon and Kendall (1976) in their study of 92 subjects found that low ability students were more creative in formal approaches and high ability students were more creative with informal approaches. Grapko (1972) reported that high ability students did not differ in achievement in formal and informal approaches although low ability students did significantly better with formal approaches.
Theoretical Framework

A construct of Bloom's theory of mastery learning and Knowles' assumptions of andragogy serve as the theoretical framework for this study.

The construct of Bloom's theory of mastery learning is:

"Most students become very similar with regard to learning ability, rate of learning and motivation for further learning when provided with favorable learning conditions. When students are given positive feedback and additional help as they need it, they become more and more similar in their learning habits." (Bloom, 1978)

Knowles has defined four assumptions upon which andragogy is based. The assumptions are that as a person matures:

1. His self-concept moves from one of being a dependent personality toward one of being a self-directed human being.
2. He accumulates a growing reserve of experience that becomes an increasing resource for learning.
3. His readiness to learn becomes increasingly oriented to the developmental tasks of his social role.
4. His time perspective changes from one of postponed application of knowledge to immediacy of application, and his orientation toward learning shifts from one of subject-centeredness to one of problem-centeredness (Knowles, 1970).
CHAPTER 3
Methodology

This chapter explicates the background of the study, research population, description of the variables, research design, method of data collection and method of data analysis.

Background of the Study

The study was conducted in a state supported college in a town of 30,000 population located in the Pacific Northwest. Committed to open door policy, the college enrolls approximately 1500 students each year. The nursing division has established admission criteria, operationalized by a formal admission grid, by which students are admitted to the nursing major (see Appendix A-B). Students not meeting all of the admission criteria are provisionally admitted to the nursing major. Admission to the nursing sequence occurs once a year, the beginning of the fall semester.

Population. Students who had been admitted to the associate degree nursing program fall semesters of 1976, 1979 and 1980 and who had completed a minimum of one semester of nursing course work were the population of the study. Students transferring into the program during other semesters were not included. The total population for the study was 107 students.
The ten students provisionally admitted in the fall of 1979 and the ten students provisionally admitted in the fall of 1980, a total of 20 students, became the sample. These students were provided with either formal or informal learning assistance during the first 32 weeks of the nursing curriculum.

The non-equivalent control groups consisted of the unconditionally admitted students for the fall terms of 1979 and 1980. There were 15 unconditionally admitted students in the class of 1979 and 30 in the class of 1980, yielding a total of 45 unconditionally admitted students. These students progressed through the same nursing curriculum as the provisionally admitted students but did not receive either formal or informal learning assistance.

The ex post facto matched group for the study was selected from the class admitted in 1976. Matching was between groups, not individual to individual. Criteria used for selection were the admission grid scores. Original admission criteria used for the class of 1976 were different from those used in 1979 and 1980. To make the groups comparable using unbiased selection criteria, the admission grid scores for all members of the class were computed. This resulted in 15 students being classified in the category of provisional admission. These students had not been identified while enrolled in the nursing sequence and did not receive learning assistance. They were
expected by the nursing faculty to achieve at a level comparable to the other students in the class. The total enrollment in this class was 42 students.

The class admitted to the nursing sequence for the fall of 1977 was omitted from the study since it was considered to be atypical for reasons external to the study purpose. Difficulties within the college such as faculty turnover and student policy changes resulted in an extremely high attrition rate for that class.

The entering class of 1978 was omitted from the study because no students were admitted to the nursing sequence on a provisional basis that year.

Groups under study were pre-existing groups; therefore, randomization was not possible. The basic curriculum pattern and grading scale remained unchanged during the time span in which the study was conducted.

Variables

The dependent variables for this study were a grade of "C" or better at the completion of each of the four nursing classes and the demonstration of successful performance on the licensing examination at the completion of the program.

Extraneous variables identified were the admission criteria by which students were admitted to the nursing program, previous education and life experience of the
students and students' self-esteem.

The independent variables for this study were learning assistance, informal learning assistance and formal learning assistance. For reader clarification, informal and formal learning assistance variables are discussed.

**Informal and Formal Learning Assistance.** Students provisionally admitted to the nursing major for the fall terms of 1979 and 1980 were provided with learning assistance during the first 32 weeks of the nursing curriculum. In each year, meetings were held weekly for the first six weeks of the semester. These meetings consisted of orientation activities related to the nursing program and the college community. During the remainder of the 26 weeks, bi-monthly meetings were scheduled. This provided the provisionally admitted students a total of 19 hours of learning assistance or 13 percent more contact hours than the unconditionally admitted students.

During both years the content used in the learning assistance meetings was similar. The instructional approach used for each of the years, 1979 and 1980, differed.

Students provisionally admitted in the fall of 1979 participated in informal learning assistance activities. Attendance at the meetings was voluntary, but the majority of students attended each meeting. The associate degree nursing program coordinator was responsible for the
sessions. Topics were planned in advance by the group; however, many topics developed spontaneously according to student need. A variety of teaching strategies and enrichment activities was employed. In addition, individual or small group counseling or tutorial sessions could be scheduled by the coordinator or the students.

Students provisionally admitted in the fall of 1980 participated in formal learning assistance activities. Attendance at the meetings was mandatory. Various faculty members, determined by area of expertise, including some from other disciplines presided over the sessions. Meeting topics and goals to be achieved were determined by the faculty with limited student input. Requests for individual or small group tutorial sessions were not encouraged.

Research Design

The research design employed for this study was quasi-experimental. According to Isaac and Michael (1971) "...the quasi-experimental design approximates the condition of the true experiment in a setting which does not allow the control and/or manipulation of all relevant variables." Some compromises do exist in the internal and external validity in this type of research design. The characteristics of the design allow the researcher to get as close to the rigors of experimental research as conditions permit, carefully qualifying exceptions and limitations.
Campbell and Stanley (1966) have clearly identified the five most common major threats to internal validity when conducting quasi-experiments. These are referred to as history, selection, maturation, testing and mortality.

History refers to the occurrence of events, external to the treatment, which take place concurrently with the treatment and which can affect the dependent variables (Polit and Hungler, 1978). A true experimental design controls for history threats by use of a comparison or control group. With two groups, it can be assumed that external factors are as likely to affect one group as another (Williamson, 1981). Comparative groups were used in this study, so historical happenings would not affect the results.

Differential selection of subjects occurs with preformed groups. Such groups may be different initially, which may account for post-test differences. The problem of selection is clearly reduced when pretreatment data are collected (Polit and Hungler, 1978). In this study, the pretreatment data consisted of the admission grid scores.

Differences that can be attributed to biological changes such as aging or fatigue in the subject occurring over time are maturational effects. Maturational effects are problematic only in studies lacking a control group (Williamson, 1981). While maturation may be considered a threat, it did not prove to be so in this study due to the
use of comparative groups.

The effects of taking a pre-test upon the scores of a post-test are known as testing effects (Polit and Hungler, 1978). In this study, the students were grouped by their admission grid scores. Pre-testing did not take place, so this would not be a source of invalidity.

Mortality refers to the differential loss of subjects from comparison groups. Problems of mortality or attrition tend to increase as the length of a study increases (Williamson, 1981). Due to the design of the study, the mortality of the subjects did not affect the internal validity.

Since the hypotheses posed called for separate control groups, it was necessary to utilize two quasi-experimental designs, non-equivalent control group and matched group. Each of these designs will be described.

Non-Equivalent Control Group Design. The non-equivalent control group is used when the researcher is unable to make random assignments of subjects to treatment and control groups (Williamson, 1981). The researcher utilizes already constituted groups.

For this study the design utilized was:

<table>
<thead>
<tr>
<th>S</th>
<th>0₁</th>
<th>0₂</th>
<th>0₃</th>
<th>0₄</th>
<th>0₅</th>
</tr>
</thead>
<tbody>
<tr>
<td>Provisionally Admitted Students</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Unconditionally Admitted Students</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
S represents the students and X represents learning assistance. $O_1$ represents the first semester nursing course grades, $O_2$ represents the second semester nursing course grades, $O_3$ represents the third semester nursing course grades, $O_4$ represents the fourth semester nursing course grades and $O_5$ represents passing the State Board Test Pool Examination. This design was used to compare the four semester course grades and the State Board Test Pool Examination results of the provisionally admitted students to the unconditionally admitted students in the same class for the years 1979 and 1980.

Williamson (1981) states this non-equivalent control group design "...may be extended to include variations of the independent variable." He explains that this can be done without a control group; however, a control group would allow the researcher to draw more powerful conclusions.

The design was extended to compare the differences in the mean grade scores of the study group admitted in 1979 that received informal learning assistance to the mean grade scores of the study group admitted in 1980 that received formal learning assistance.

The extended design utilized for this study was:

<table>
<thead>
<tr>
<th></th>
<th>$X_a$</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>S</td>
<td>$O_1$</td>
<td>$O_2$</td>
<td>$O_3$</td>
</tr>
<tr>
<td></td>
<td>$O_4$</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>$X_b$</td>
<td></td>
<td></td>
</tr>
<tr>
<td>S</td>
<td>$O_1$</td>
<td>$O_2$</td>
<td>$O_3$</td>
</tr>
<tr>
<td></td>
<td>$O_4$</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

1979

1980
S represents provisionally admitted students. $O_1$ represents the first semester nursing course grades, $O_2$ represents the second semester nursing course grades, $O_3$ represents the third semester nursing course grades and $O_4$ represents the fourth semester nursing course grades. $X_a$ represents informal learning assistance and $X_b$ represents formal learning assistance. For this study, a control group was not available.

**Matched Group Design.** This is a procedure for creating equivalent study groups in the absence of randomization. The researcher begins with subjects who are receiving the intervention and then attempts to create a control group by matching the subjects with a group in the general population on characteristics that presumably have an effect on the outcome of the study (Williamson, 1981). The identified characteristic for both groups was the admission grid score. The mean grid score for each group was 9.8. The combined group of students provisionally admitted in 1979 and 1980, who received learning assistance, was compared with the group of students provisionally admitted in 1976, who did not receive learning assistance, to assess the effectiveness of learning assistance on the State Board Test Pool Examination results.

**Method of Data Collection**

Approval to conduct the study in the division of
nursing was granted by the Academic Vice President and the Chairperson, Division of Nursing in June, 1982 (see Appendix C). Each record examined was number coded to assure anonymity; therefore, human subject permission was not deemed necessary.

The college record for each student admitted to the associate degree nursing program for 1976, 1979 and 1980 was reviewed. Specific data collected from each record were:

1. Grades for all nursing courses attempted.
2. State Board Test Pool Examination results.

**Method of Data Analysis**

The data for each category were tabulated. Percentage comparisons were calculated for all comparable frequency data. Percentage data were rounded off and reported in the nearest whole number.

The $t$ test for matched and non-independent samples was utilized to test the significance of the means of the posed hypotheses regarding numerical grades in nursing courses. If the result of the computation reached a .05 level of significance, the null hypothesis was accepted. Symbols utilized in reporting the results of the application of the $t$ test for non-independent or matched samples are listed:

$\bar{x}$ = Mean

df = Degree of freedom to vary

$p$ = Significance, probability
The chi square test of significance was applied in analyzing the State Board Test Pool Examination results. If the result of the computation reached a .05 level of significance, the null hypothesis was accepted. If the degree of freedom equaled one, corrected chi square was used. Symbols utilized in reporting the results of the application of the chi square test of significance are:

- \( f \) = Frequency
- \( X^2 \) = Chi square
- \( df \) = Degree of freedom to vary
- \( p \) = Significance, probability
- \( p > .05 \) = Significance greater than accepted level: accept null hypothesis
- \( p < .05 \) = Significance less than accepted level: reject null hypothesis

\( p > .05 \) = Significance greater than accepted level: accept null hypothesis
\( p < .05 \) = Significance less than accepted level: reject null hypothesis

\( t \) = Significance of the relationship between the means of 2 groups

\( SD \) = Standard deviation
CHAPTER 4
Analysis of Data

This chapter was designed to include a description of the sample and the analysis of the data. The collected data on nursing course grades were subjected to the $t$-test for non-independent samples. The chi-square test of significance was used to analyze State Board Test Pool Examination results.

Characteristics of the Sample

The sample consisted of twenty students provisionally admitted to an associate degree nursing program in a state supported college in a rural community in the Pacific Northwest.

Demographic data were collected for the sample. Mean age of the sample population was 27 years with a range of 19 to 42 years. Nineteen, or 95 percent, of the sample were female and one, or 5 percent, was male. Mean admission grid score for the sample was 9.81. Table 1 shows admission status, age, sex and grid scores for the sample and the comparison groups.

Twelve, or 60 percent, of the sample completed a minimum of 15 college credits prior to admission to the nursing program; two, or 10 percent, held a baccalaureate degree. Table 2 shows percentage distribution of the sample
Table 1

Characteristics of Students Admitted to the Nursing Classes for 1976, 1979 and 1980 by Age, Sex and Grid Scores

<table>
<thead>
<tr>
<th>Year</th>
<th>Status</th>
<th>Admissions</th>
<th>Sex</th>
<th>Age</th>
<th>Grid Score</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Number</td>
<td>Per-cent</td>
<td>Number</td>
<td>Per-cent</td>
</tr>
<tr>
<td>1976</td>
<td>U*</td>
<td>27</td>
<td>64</td>
<td>25</td>
<td>60</td>
</tr>
<tr>
<td></td>
<td>P**</td>
<td>15</td>
<td>36</td>
<td>14</td>
<td>33</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>42</td>
<td>100</td>
<td>39</td>
<td>93</td>
</tr>
<tr>
<td>1979</td>
<td>U</td>
<td>15</td>
<td>60</td>
<td>14</td>
<td>56</td>
</tr>
<tr>
<td></td>
<td>P***</td>
<td>10</td>
<td>40</td>
<td>10</td>
<td>40</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>25</td>
<td>100</td>
<td>24</td>
<td>96</td>
</tr>
<tr>
<td>1980</td>
<td>U</td>
<td>30</td>
<td>75</td>
<td>29</td>
<td>72</td>
</tr>
<tr>
<td></td>
<td>P***</td>
<td>10</td>
<td>25</td>
<td>9</td>
<td>22</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>40</td>
<td>100</td>
<td>38</td>
<td>94</td>
</tr>
</tbody>
</table>

*Unconditional
**Provisional
***Sample
and the comparison groups by level of education.

Nursing course grades were tabulated and percentage comparisons computed (see Appendix D-G). Eighteen, or 90 percent, of the sample completed four semesters of the nursing program; two, or 10 percent dropped the program after the second semester. Table 3 shows percentage progression through the nursing courses of the sample and comparison groups.

Findings of Fifteen Null Hypotheses

The 15 null hypotheses pertaining to the findings of the effects of learning assistance will be demonstrated in this section. Data relating to the comparison of means for nursing course grades were subjected to the t test for non-independent samples. Data relating to the comparisons of State Board Test Pool Examination results were subjected to the chi square test of significance.

Informal Learning Assistance in Nursing I - Class of 1979.

Null hypothesis one stated that there would be no significant difference at the .05 level in the first semester nursing course grades between students provisionally admitted to an associate degree nursing class who receive informal learning assistance and students unconditionally admitted to the same class.

The mean grade received in Nursing I by the unconditionally admitted students in the class of 1979 was 84.93; the standard deviation was 4.64. The provisionally
Table 2

Percentage Distribution of Unconditionally and Provisionally Admitted Students for 1976, 1979, and 1980 According to Levels of Education

<table>
<thead>
<tr>
<th>Year</th>
<th>Status</th>
<th>N</th>
<th>GED Number</th>
<th>GED Percent</th>
<th>High School Number</th>
<th>High School Percent</th>
<th>College 15+ Credits Number</th>
<th>College 15+ Credits Percent</th>
<th>College Bacc. Degree Number</th>
<th>College Bacc. Degree Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>1976</td>
<td>U*</td>
<td>27</td>
<td>1</td>
<td>3.7</td>
<td>4</td>
<td>14.8</td>
<td>17</td>
<td>63.0</td>
<td>5</td>
<td>18.5</td>
</tr>
<tr>
<td></td>
<td>P**</td>
<td>15</td>
<td>-</td>
<td>-</td>
<td>4</td>
<td>26.6</td>
<td>11</td>
<td>73.0</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>42</td>
<td>1</td>
<td>2.4</td>
<td>8</td>
<td>16.7</td>
<td>28</td>
<td>66.7</td>
<td>5</td>
<td>11.9</td>
</tr>
<tr>
<td>1979</td>
<td>U</td>
<td>15</td>
<td>1</td>
<td>6.7</td>
<td>3</td>
<td>20.0</td>
<td>9</td>
<td>60.0</td>
<td>1</td>
<td>6.7</td>
</tr>
<tr>
<td></td>
<td>P***</td>
<td>10</td>
<td>-</td>
<td>-</td>
<td>2</td>
<td>20.0</td>
<td>7</td>
<td>70.0</td>
<td>1</td>
<td>10.0</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>25</td>
<td>1</td>
<td>4.0</td>
<td>5</td>
<td>20.0</td>
<td>16</td>
<td>64.0</td>
<td>2</td>
<td>8.0</td>
</tr>
<tr>
<td>1980</td>
<td>U</td>
<td>30</td>
<td>1</td>
<td>3.3</td>
<td>8</td>
<td>27.0</td>
<td>20</td>
<td>70.0</td>
<td>1</td>
<td>3.3</td>
</tr>
<tr>
<td></td>
<td>P***</td>
<td>10</td>
<td>-</td>
<td>-</td>
<td>4</td>
<td>40.0</td>
<td>5</td>
<td>50.0</td>
<td>1</td>
<td>10.0</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>40</td>
<td>1</td>
<td>2.5</td>
<td>12</td>
<td>30.0</td>
<td>25</td>
<td>62.5</td>
<td>2</td>
<td>5.0</td>
</tr>
</tbody>
</table>

*Unconditional  
**Provisional  
***Sample
## Table 3

Progression of Unconditionally and Provisionally Admitted Students Through Nursing I, II, III, IV for the Years 1976, 1979 and 1980

<table>
<thead>
<tr>
<th>Year</th>
<th>Status</th>
<th>Admission Nursing I</th>
<th>Nursing II</th>
<th>Progression Nursing III</th>
<th>Nursing IV</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>N</td>
<td>Number</td>
<td>Percent</td>
<td>N</td>
</tr>
<tr>
<td>1976</td>
<td>U*</td>
<td>27</td>
<td>26</td>
<td>96.3</td>
<td>24</td>
</tr>
<tr>
<td></td>
<td>P**</td>
<td>15</td>
<td>12</td>
<td>80.0</td>
<td>10</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>42</td>
<td>38</td>
<td>90.5</td>
<td>34</td>
</tr>
<tr>
<td>1979</td>
<td>U</td>
<td>15</td>
<td>15</td>
<td>100.0</td>
<td>15</td>
</tr>
<tr>
<td></td>
<td>P***</td>
<td>10</td>
<td>10</td>
<td>100.0</td>
<td>9</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>25</td>
<td>25</td>
<td>100.0</td>
<td>24</td>
</tr>
<tr>
<td>1980</td>
<td>U</td>
<td>30</td>
<td>30</td>
<td>100.0</td>
<td>28</td>
</tr>
<tr>
<td></td>
<td>P***</td>
<td>10</td>
<td>10</td>
<td>100.0</td>
<td>9</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>40</td>
<td>40</td>
<td>100.0</td>
<td>37</td>
</tr>
</tbody>
</table>

* Unconditional  
** Provisional  
*** Sample
admitted students received a mean score of 87.80 and a standard deviation of 4.76. The t test applied to the difference in the means revealed a t value of 1.50 with 23 degrees of freedom.

Therefore, null hypothesis one did not achieve significance at the .05 level and was accepted as true. Table 4 indicates the statistical results for null hypothesis one.

Table 4

<table>
<thead>
<tr>
<th>Status</th>
<th>X</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unconditional</td>
<td>84.93</td>
<td>4.64</td>
</tr>
<tr>
<td>Provisional</td>
<td>87.80</td>
<td>4.76</td>
</tr>
</tbody>
</table>

\[ t = 1.50 \]
\[ df = 23 \]
\[ p > .05 \]

Informal Learning Assistance in Nursing II - Class of 1979.

Null hypothesis two stated that there would be no significant difference at the .05 level in the second semester nursing course grades between students provisionally admitted to an associate degree nursing class who receive informal learning assistance and students
unconditionally admitted to the same class.

The mean grade received in Nursing II by the unconditionally admitted students in the class of 1979 was 82.00; the standard deviation was 5.67. The provisionally admitted students received a mean score of 86.50 and a standard deviation of 3.06. The t test applied to the difference in the means revealed a t value of 2.29 with 23 degrees of freedom.

Therefore, null hypothesis two achieved significance at the .05 level and was rejected. Table 5 indicates the statistical results for null hypothesis two.

Table 5

<table>
<thead>
<tr>
<th>Status</th>
<th>X</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unconditional</td>
<td>82.00</td>
<td>5.67</td>
</tr>
<tr>
<td>Provisional</td>
<td>86.50</td>
<td>3.06</td>
</tr>
</tbody>
</table>

$t = 2.29$

$df = 23$

$p < .05$

Informal Learning Assistance in Nursing III - Class of 1979.

Null hypothesis three stated there would be no significant difference at the .05 level in the third semester
nursing course grades between students provisionally admitted to an associate degree nursing class who receive informal learning assistance and students unconditionally admitted to the same class.

The mean grade received in Nursing III by the unconditionally admitted students in the class of 1979 was 86.33, the standard deviation was 4.66. The provisionally admitted students received a mean score of 88.56 and a standard deviation of 3.13. The $t$ test applied to the difference in the means revealed a $t$ value of 1.23 with 19 degrees of freedom.

Therefore, null hypothesis three did not achieve significance at the .05 level and was accepted as true. Table 6 indicates the statistical results for null hypothesis three.

<table>
<thead>
<tr>
<th>Status</th>
<th>$X$</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unconditional</td>
<td>86.33</td>
<td>4.66</td>
</tr>
<tr>
<td>Provisional</td>
<td>88.56</td>
<td>3.13</td>
</tr>
</tbody>
</table>

$t = 1.23$

$df = 19$

$p > .05$
Informal Learning Assistance in Nursing IV - Class of 1979.

Null hypothesis four stated that there would be no significant difference at the .05 level of significance in the fourth semester nursing course grades between students provisionally admitted to an associate degree nursing class who receive informal learning assistance and students unconditionally admitted to the same class.

The mean grade received in Nursing IV by the unconditionally admitted students in the class of 1979 was 81.58; the standard deviation was 5.21. The provisionally admitted students received a mean score of 83.22 and a standard deviation of 4.94. The t test applied to the difference in the means revealed a t value of 0.73 with 19 degrees of freedom.

Therefore, null hypothesis four did not achieve significance at the .05 level and was accepted as true. Table 7 indicates the statistical results for null hypothesis four.

Informal Learning Assistance and State Board Results - Class of 1979.

Null hypothesis five stated there would be no significant difference at the .05 level in the successful completion of the State Board Test Pool Examination between students provisionally admitted to an associate degree nursing class who receive informal learning assistance and students unconditionally admitted to the same class.
Analysis of the State Board Test Pool Examination results for the 21 students who entered the nursing program in 1979 showed that 19 students, or 91 percent, passed the examination. Two, or 10 percent, of the students failed the examination. Eleven, or 92 percent, of the unconditionally admitted students passed the examination; one student, or 8 percent, failed. Eight, or 89 percent, of the provisionally admitted students passed the examination and one, or 11 percent, failed. The chi square value of the obtained frequencies was not significant at .05 level with one degree of freedom.

Therefore, null hypothesis five did not achieve significance at the 0.5 level and was accepted as true. Table 8 indicates the statistical results for null hypothesis five.

### Table 7

<table>
<thead>
<tr>
<th>Status</th>
<th>X</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unconditional</td>
<td>81.58</td>
<td>5.21</td>
</tr>
<tr>
<td>Provisional</td>
<td>83.22</td>
<td>4.94</td>
</tr>
</tbody>
</table>

\[ t = 0.73 \]
\[ df = 19 \]
\[ p > .05 \]
Table 8
Chi Square Value of State Board Test Pool Examination Results for Unconditionally and Provisionally Admitted Students for 1979

<table>
<thead>
<tr>
<th>Source</th>
<th>Pass</th>
<th>Fail</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>f</td>
<td>f</td>
</tr>
<tr>
<td></td>
<td>Per-</td>
<td>Per-</td>
</tr>
<tr>
<td></td>
<td>cent</td>
<td>cent</td>
</tr>
<tr>
<td>Unconditional</td>
<td>11</td>
<td>1</td>
</tr>
<tr>
<td>Provisional</td>
<td>8</td>
<td>1</td>
</tr>
<tr>
<td>Total</td>
<td>19</td>
<td>2</td>
</tr>
</tbody>
</table>

\[
X^2 = 0.00
\]
\[
df = 1
\]
\[p > 0.05\]

Formal Learning Assistance in Nursing I - Class of 1980.

Null hypothesis six stated that there would be no significant difference at the .05 level of significance in the first semester nursing course grades between students provisionally admitted to an associate degree nursing class who receive formal learning assistance and students unconditionally admitted to the same class.

The mean grade received in Nursing I by the unconditionally admitted students in the class of 1980 was 87.40; the standard deviation was 4.72. The provisionally admitted students received a mean score of 84.40 and a standard deviation of 4.17. The t test applied to the difference in the means revealed a t value of 1.79 with 38
degrees of freedom.

Therefore, null hypothesis six did not achieve significance at the .05 level and was accepted as true. Table 9 indicates the statistical results for null hypothesis six.

Table 9

\[ t \text{ Test on Nursing I Grades for Unconditionally and Provisionally Admitted Students for 1980} \]

<table>
<thead>
<tr>
<th>Status</th>
<th>X</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unconditional</td>
<td>87.40</td>
<td>4.72</td>
</tr>
<tr>
<td>Provisional</td>
<td>84.40</td>
<td>4.17</td>
</tr>
</tbody>
</table>

\[ t = 1.79 \]
\[ df = 38 \]
\[ p>.05 \]

Formal Learning Assistance in Nursing II - Class of 1980.

Null hypothesis seven stated that there would be no significant difference at the .05 level in the second semester nursing course grades between students provisionally admitted to an associate degree nursing class who receive formal learning assistance and students unconditionally admitted to the same class.

The mean grade received in Nursing II by the unconditionally admitted students in the class of 1980 was
82.33; the standard deviation was 6.13. The provisionally admitted students received a mean score of 78.80 and a standard deviation of 4.10. The $t$ test applied to the difference in the means revealed a $t$ value of 1.69 with 38 degrees of freedom.

Therefore, null hypothesis seven did not achieve significance at the .05 level and was accepted as true. Table 10 indicates the statistical results for null hypothesis seven.

Table 10

$t$ Test on Nursing II Grades for Unconditionally and Provisionally Admitted Students for 1980

<table>
<thead>
<tr>
<th>Status</th>
<th>$X$</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unconditional</td>
<td>82.33</td>
<td>6.13</td>
</tr>
<tr>
<td>Provisional</td>
<td>78.80</td>
<td>4.10</td>
</tr>
</tbody>
</table>

$t = 1.69$

$df = 38$

$p > .05$

Formal Learning Assistance in Nursing III - Class of 1980.

Null hypothesis eight stated that there would be no significant difference at the .05 level in the third semester nursing course grades between students provisionally admitted to an associate degree nursing class
who receive informal learning assistance and students unconditionally admitted to the same class.

The mean grade received in Nursing III by the unconditionally admitted students in the class of 1980 was 84.96; the standard deviation was 5.37. The provisionally admitted students received a mean score of 80.44 and a standard deviation of 3.32. The $t$ test applied to the difference in the means revealed a $t$ value of 2.37 with 35 degrees of freedom.

Therefore, null hypothesis eight achieved significance at the .05 level and was rejected. Table 11 indicates the statistical results for null hypothesis eight.

Table 11
$t$ Test on Nursing III Grades for Unconditionally and Provisionally Admitted Students for 1980

<table>
<thead>
<tr>
<th>Status</th>
<th>$X$</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unconditional</td>
<td>84.96</td>
<td>5.37</td>
</tr>
<tr>
<td>Provisional</td>
<td>80.44</td>
<td>3.32</td>
</tr>
</tbody>
</table>

$t = 2.37$

$df = 35$

$p < .05$
Formal Learning Assistance in Nursing IV - Class of 1980.

Null hypothesis nine stated that there would be no significant difference at the .05 level in the third semester nursing course grades between students provisionally admitted to an associate degree nursing class who receive informal learning assistance and students unconditionally admitted to the same class.

The mean grade received in Nursing IV by the unconditionally admitted students in the class of 1980 was 86.04; the standard deviation was 4.39. The provisionally admitted students received a mean score of 79.67 and a standard deviation of 3.57. The $t$ test applied to the difference in the means revealed a $t$ value of 3.94 with 35 degrees of freedom.

Therefore, null hypothesis nine achieved significance at the .05 level and was rejected. Table 12 indicates the statistical results for null hypothesis nine.

Formal Learning Assistance and State Board Results - Class of 1980.

Null hypothesis ten stated that there would be no significant difference at the .05 level in the successful completion of the State Board Test Pool Examination between students provisionally admitted to an associate degree nursing class who receive formal learning assistance and students unconditionally admitted to the same class.
Table 12

\[ t \] Test on Nursing IV Grades for Unconditionally and Provisionally Admitted Students for 1980

<table>
<thead>
<tr>
<th>Status</th>
<th>X</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unconditional</td>
<td>86.04</td>
<td>4.39</td>
</tr>
<tr>
<td>Provisional</td>
<td>79.67</td>
<td>3.57</td>
</tr>
</tbody>
</table>

\[ t = 3.94 \]
\[ df = 35 \]
\[ p < .05 \]

Analysis of the State Board Test Pool Examination results for the 37 students who entered the nursing program in 1980 showed that 35 students, or 95 percent, passed the examination. Two, or 5 percent, of the students failed the examination. Twenty-seven, or 95 percent, of the unconditionally admitted students passed the examination; one student, or five percent, failed. Eight or eighty-nine percent, of the provisionally admitted students passed the examination and one, or 11 percent, failed. The chi square value of the obtained frequencies was not significant at the .05 level with one degree of freedom.

Therefore, null hypothesis ten did not achieve significance at the .05 level and was accepted. Table 13 indicates the statistical results for null hypothesis ten.

Null hypothesis eleven stated that there would be no significant difference at the .05 level in the first semester nursing course grades between students provisionally admitted to an associate degree nursing program who receive informal learning assistance and students provisionally admitted to the same program who receive formal learning assistance.

The mean numerical grade received by the provisionally admitted students in the class of 1979 who received informal learning assistance was 87.80; the standard deviation was 4.76. The provisionally admitted students in the class of 1980, who received formal learning

Table 13
Chi Square Value of State Board Test Pool Examination Results for Unconditionally and Provisionally Admitted Students for 1980

<table>
<thead>
<tr>
<th>Source</th>
<th>Pass</th>
<th>Fail</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>f</td>
<td>f</td>
</tr>
<tr>
<td></td>
<td>%</td>
<td>%</td>
</tr>
<tr>
<td>Unconditional</td>
<td>27</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>96.4</td>
<td>3.6</td>
</tr>
<tr>
<td>Provisional</td>
<td>8</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>88.9</td>
<td>11.1</td>
</tr>
<tr>
<td>Total</td>
<td>35</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>94.6</td>
<td>5.4</td>
</tr>
</tbody>
</table>

\[ x^2 = 0.00 \]
\[ df = 1 \]
\[ p>.05 \]
assistance, received a mean score of 84.40 and a standard deviation of 4.17. The $t$ test applied to the difference in the means revealed a $t$ value of 1.70 with 18 degrees of freedom.

Therefore, null hypothesis eleven did not achieve significance at the .05 level of significance and was accepted as true. Table 14 indicates the statistical results for null hypothesis eleven.

Table 14

<table>
<thead>
<tr>
<th>Source</th>
<th>X</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Informal</td>
<td>87.80</td>
<td>4.76</td>
</tr>
<tr>
<td>Formal</td>
<td>84.40</td>
<td>4.17</td>
</tr>
</tbody>
</table>

$t = 1.70$
$df = 18$
p > .05


Null hypothesis twelve stated that there would be no significant difference at the .05 level in the second semester nursing course grades between students provisionally admitted to an associate degree nursing program who receive informal learning assistance and
students provisionally admitted to the same program who receive formal learning assistance.

The mean numerical grade received by the provisionally admitted students in the class of 1979 who received informal learning assistance was 86.50; the standard deviation was 3.06. The provisionally admitted students in the class of 1980, who received formal learning assistance, received a mean score of 78.80 and a standard deviation of 4.10. The t test applied to the difference in the means revealed a t value of 4.75 with 18 degrees of freedom.

Therefore, null hypothesis twelve achieved significance at the .05 level of significance and was rejected. Table 15 indicates the statistical results for null hypothesis twelve.

Table 15

<table>
<thead>
<tr>
<th>Source</th>
<th>X</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Informal</td>
<td>86.50</td>
<td>3.06</td>
</tr>
<tr>
<td>Formal</td>
<td>78.80</td>
<td>4.10</td>
</tr>
</tbody>
</table>

\[ t = 4.75 \]
\[ df = 18 \]
\[ p < .05 \]
Informal Versus Formal Learning Assistance in Nursing
III - Class of 1979 and 1980.

Null hypothesis thirteen stated that there would be no significant difference at the .05 level in the third semester nursing course grades between students provisionally admitted to an associate degree nursing program who receive informal learning assistance and students provisionally admitted to the same program who receive formal learning assistance.

The mean numerical grade received by the provisionally admitted students in the class of 1979 who received informal learning assistance was 88.56; the standard deviation was 3.13. The provisionally admitted students in the class of 1980, who received formal learning assistance, received a mean score of 80.44; and a standard deviation of 3.32. The \( t \) test applied to the difference in the means revealed a \( t \) value of 5.33 with 16 degrees of freedom.

Therefore, null hypothesis thirteen achieved significance at the .05 level of significance and was rejected. Table 16 indicates the statistical results for null hypothesis thirteen.

Informal Versus Formal Learning Assistance in Nursing
IV - Class of 1979 and 1980.

Null hypothesis fourteen stated that there would be no significant difference at the .05 level in the fourth semester nursing course grades between students provisionally admitted to an associate degree nursing
Table 16

$t$ Test on Nursing III Grades for Provisionally Admitted Students Receiving Informal or Formal Learning Assistance for 1979 and 1980

<table>
<thead>
<tr>
<th>Source</th>
<th>X</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Informal</td>
<td>88.56</td>
<td>3.13</td>
</tr>
<tr>
<td>Formal</td>
<td>80.44</td>
<td>3.32</td>
</tr>
</tbody>
</table>

$t = 5.33$

$df = 16$

$p < .05$

program who receive informal learning assistance and students provisionally admitted to the same program who receive formal learning assistance.

The mean numerical grade received by the provisionally admitted students in the class of 1979 who received informal learning assistance was 83.22; the standard deviation was 4.94. The provisionally admitted students in the class of 1980 who received formal learning assistance received a mean score of 79.67 and a standard deviation of 3.57. The $t$ test applied to the difference in the means revealed a $t$ value of 1.75 with 16 degrees of freedom.

Therefore, null hypothesis fourteen did not achieve significance at the .05 level of significance and was accepted as true. Table 17 indicates the statistical results for null hypothesis fourteen.
Table 17

t Test on Nursing IV Grades for Provisionally Admitted Students Receiving Informal or Formal Learning Assistance for 1979 and 1980

<table>
<thead>
<tr>
<th>Source</th>
<th>X</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Informal</td>
<td>83.22</td>
<td>4.94</td>
</tr>
<tr>
<td>Formal</td>
<td>79.67</td>
<td>3.57</td>
</tr>
</tbody>
</table>

$t = 1.75$
$df = 16$
$p>.05$


Null hypothesis fifteen stated that there would be no significant difference at the .05 level in the successful completion of the State Board Test Pool Examination between students provisionally admitted to an associate degree nursing program who received learning assistance, formal or informal, and students provisionally admitted to the same program who did not receive learning assistance.

Analysis of the State Board Test Pool Examination results for the provisionally admitted students in 1976 and the combined classes of provisionally admitted students for 1979 and 1980 showed that 21 students, or 75 percent, passed the examination. Five, or fifty percent, of the students in 1976 passed the examination; five, or 50
percent failed. Sixteen, or 89 percent, of the students in the combined classes of 1979 and 1980 passed the examination and two students, or 11 percent, failed. The chi square value of the obtained frequencies was not significant at the .05 level with one degree of freedom.

Therefore, null hypothesis fifteen did not achieve significance at the .05 level and was accepted. Table 18 indicates the statistical results for null hypothesis fifteen.

Table 18
State Board Test Pool Examination Results for Provisionally Admitted Students who Received Learning Assistance and Provisionally Admitted Students who did not Receive Learning Assistance

<table>
<thead>
<tr>
<th>Source</th>
<th>Pass</th>
<th>Fail</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>f</td>
<td>f</td>
</tr>
<tr>
<td></td>
<td>Per-</td>
<td>Per-</td>
</tr>
<tr>
<td></td>
<td>cent</td>
<td>cent</td>
</tr>
<tr>
<td>1976</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>50.00</td>
<td>50.00</td>
<td></td>
</tr>
<tr>
<td>1979 and 1980</td>
<td>16</td>
<td>2</td>
</tr>
<tr>
<td>88.9</td>
<td>11.1</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>21</td>
<td>7</td>
</tr>
<tr>
<td>75.00</td>
<td>25.0</td>
<td></td>
</tr>
</tbody>
</table>

\[ X^2 = 3.32 \]

\[ df = 1 \]

\[ p > .05 \]
CHAPTER 5
Summary, Findings, Limitations and Recommendations

This chapter presents a summary of the research problem and design, findings of the fifteen research hypotheses, a discussion of the major findings, limitations of the study and recommendations for further study.

Summary of Research Problem and Design

This study was conducted to assess the effectiveness of learning assistance on the success of provisionally admitted students in an associate degree nursing program as evaluated by nursing course grades and State Board Test Pool Examination results. Learning assistance in cognitive skills, counseling and the use of support groups may help students experience success and remain in the nursing program.

The literature review included learning assistance for adults and formal versus informal learning assistance. Knowles' assumptions of the adult learner and a construct of Bloom's principles of mastery learning provided the theoretical framework for the study.

The population for the study was composed of 107 students admitted to an associate degree nursing program at a state supported college in the Pacific Northwest for the years 1976, 1979 and 1980. The sample was composed of 10
students provisionally admitted to the nursing program in the fall of 1979 and 10 students provisionally admitted in the fall of 1980, yielding a total of 20 students.

A quasi-experimental research design, using both non-equivalent control groups and a matched group, was utilized for the study. All groups were pre-existing, so random sampling could not be done. Data was obtained by examining the college record of each member of the population. Percentage comparisons were calculated for all comparable frequency data. The t test for matched or non-independent samples was employed to determine if there was a difference in means at the .05 level of significance between 1) provisionally admitted students who received learning assistance and students unconditionally admitted to the same class and 2) provisionally admitted students who received formal learning and provisionally admitted students who received informal learning assistance. The chi square test of significance was used to determine the difference on the success rate on the State Board Test Pool Examinations.

Findings of the Fifteen Hypotheses

Data on the effectiveness of providing learning assistance to provisionally admitted students indicated:

1. There was no significant difference at the .05 level in the first semester nursing course grades between students provisionally admitted and students unconditionally admitted to the same class, regardless of whether formal
or informal learning assistance was used.

2. There was a significant difference at the .05 level in the second semester nursing course grades in favor of the provisionally admitted students, versus students unconditionally admitted to the same class, when informal learning assistance was used. The difference was not significant when formal learning assistance was used.

3. There was a significant difference at the .05 level in the third and fourth semester nursing course grades in favor of the unconditionally admitted students, versus students provisionally admitted to the same class, when formal learning assistance was used. The difference was not significant when informal learning assistance was used.

4. There was no significant difference at the .05 level in the State Board Test Pool Examination success rate between provisionally admitted students and students unconditionally admitted to the same class when either formal or informal learning assistance was used.

5. There was no significant difference at the .05 level in the first and fourth semester nursing course grades between provisionally admitted students who received formal learning assistance and provisionally admitted students who received informal learning assistance.

6. There was a significant difference at the .05 level in the second and third semester nursing course grades in favor of provisionally admitted students who received
informal learning assistance versus provisionally admitted students who received formal learning assistance.

7. There was no significant difference at the .05 level on State Board Test Pool Examination success rate between provisionally admitted students who received learning assistance and provisionally admitted students who did not receive learning assistance.

8. A serendipitous finding was that the number of provisionally admitted students remaining in the program through graduation increased by 23 percent when comparing student retention for 1976 to 1980.

Discussion of the Major Findings

The majority of the sample was found to be similar to the comparative groups in regard to age, sex, grid scores and education levels.

In the state college in which this study was conducted, provisionally admitted associate degree nursing students who received learning assistance did succeed at a level comparable with the unconditionally admitted students as demonstrated on State Board Test Pool Examination results.

Both informal and formal learning assistance helped provisionally admitted students achieve success in the nursing program. The students that received informal learning assistance received higher grades in the second and third semester nursing course grades than the students who received formal learning assistance.
Limitations of the Study

Limitations of the study included the following:

1. The study utilized a relatively small, non-random sample of associate degree nursing students enrolled in a single program; therefore, the generalizability of the findings are restricted to this population.

2. The quasi-experimental research approach did not control all of the variables which may have affected the study.

Recommendations for Further Study

Based on the information obtained from this study the following recommendations are presented:

1. That the study be replicated using a larger sample and extending the study to more than one school.

2. That a study be conducted to ascertain employers' satisfaction with the work performance of the study group at one and five year intervals.

3. That faculty help adult learners succeed in the academic setting by developing learning assistance mechanisms appropriate for their particular setting and that these mechanisms be researched.
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APPENDIX A

ADMISSION CRITERIA
Purpose

The attached rating scales are tools utilized to interpret the associate degree admission criteria. These forms should be used as guides in the screening of nursing applicants. Their purpose is to provide a score for each applicant which can be utilized to rank them on the basis of established criteria. This ranking will differentiate prospective applicants only on the basis of established criteria. As with all rating and ranking instruments it is not 100% accurate. Some students who might make good nurses may be bypassed while others who will have difficulty in the profession may be selected. At present this seems to be the best tool we have available.

General Description of the Form

The form has various rating scales which will be discussed individually. The total possible score is 18. It is recommended that 12 be the lowest score for admission. A provisional category has been established with scores from 9-11. These individuals should be admitted with specific stipulations which they would have to fulfill. Scores should be calculated on each candidate and the scores ranked. The top candidates should be accepted for admission. If some candidates are accepted but do not choose to enter the program a list of alternates should be compiled to insure a complete class.

Rating Form for College Level Work

This form is designed for use with individuals who have 15 or more college credits. Individuals with less than 15 should be evaluated on the basis of the high school or GED rating form.

ACT

The ACT scale is a rating of the applicants ACT score and carries a weighting factor of one. Students who have completed 30 or more college credits are not required to take an ACT. They will receive double credit on the overall College GPA rating scale.

Overall College GPA

This scale is a rating of all the students college level work. It includes work done at Lewis-Clark State College and at all other colleges. If the student has successfully completed the academic forgiveness procedure for work done at Lewis-Clark State College, those grades will not be considered.
Number of Required/Recommended Courses

The required/recommended nursing curriculum courses are:

- Chemistry 110 5
- English 103/104 6
- Psychology 110 3
- Sociology 110 3
- Biology 252/253 8
- Biology 263 4
- General Electives 6

This rating scale gives points for the number of credit hours of these courses completed. Only those courses in which grades of "C" or better are obtained are counted. For students enrolled during the semester of application those courses being taken are counted. Each instructor should be contacted to insure that the student has the potential to complete the course. Following completion of spring semester the records should be checked to insure that individuals did complete the courses for which they were registered.

GPA in Required/Recommended Course Work

A GPA should be computed for each student based on the above list of courses. Students with less than 15 credits of required/recommended course work would not receive a rating on this scale, but would get a double rating on overall college GPA.

References

The references are rated on a 3 point rather than a five point scale. A rating committee of three people should be appointed to rate each applicant's references. A numerical average of these ratings should be calculated and transferred to each rating form. The applicant receives no points if his/her references are nonsupportive, two points if they are supportive and 3 points if they are supportive with enthusiasm.

Rating Form for High School Graduates

In concept this form is basically the same as the college level form. It has 6 rating scales although they are different in content.

ACT

The score ranges are the same as the college level rating form. The scale is weighted as a 2 whereas in the college level rating form it is rated as a one.
High School GPA

This is a simple rating of high school GPA's.

GPA in Recommended Course Work

The nursing division strongly recommends that high school students take the following courses:

1. English  
2. Social Science  
3. Algebra  
4. Chemistry  
5. Biology  
6. Physics  
7. Advanced Algebra  
8. Foreign Language

Once the grades in recommended courses have been calculated a GPA (four point scale) should be calculated for those courses. This rating scale ranks that GPA.

References

These should be done in the same manner as described previously.

GED Rating

The average of the applicant's 5 GED subtest scores is treated like the High School and College GPA's in terms of ranking. This scale is given a 2 weighting factor since GED candidates don't have the recommended or required course work ratings.

GED Subtest Rating

Those subtests which seem most directly related to skills needed in the nursing program are considered independently and rating given for them. The three subtests which are considered independently are #1 - English, #4 - Natural Science Reading and #5 - Math. Average score would be computed.

References

These are done in the same manner as described previously.
APPENDIX B

ADMISSION GRID
<table>
<thead>
<tr>
<th>NAME:</th>
<th>DATE</th>
</tr>
</thead>
<tbody>
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</tr>
<tr>
<td>Points</td>
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</tr>
<tr>
<td>GPA Ranges</td>
<td>13 - 15</td>
</tr>
<tr>
<td><strong>HIGH SCHOOL GPA</strong></td>
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</tr>
<tr>
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</tr>
<tr>
<td>GPA Ranges</td>
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</tr>
<tr>
<td><strong>GPA IN RECOMMENDED COURSE WORK</strong></td>
<td></td>
</tr>
<tr>
<td>Points</td>
<td>1</td>
</tr>
<tr>
<td>GPA Ranges</td>
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</tr>
<tr>
<td><strong>OVERALL COLLEGE GPA</strong></td>
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<tr>
<td>GPA Ranges</td>
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<tr>
<td><strong>GPA IN SELECTED COLLEGE COURSES</strong></td>
<td></td>
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<td>1</td>
</tr>
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<td>GPA Ranges</td>
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<tr>
<td><strong>GED</strong></td>
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</tr>
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<td>GPA Ranges</td>
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<tr>
<td>Points</td>
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</tr>
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<td>Ranges</td>
<td>42</td>
</tr>
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Score of 12 or above is unconditional admission; a score of 9, 10, or 11 is provisional - space available in fall.

**Students must have at least C's in Chemistry 110, Biology 252-253, 263. Deficiencies in Biology 252-253, 263 must be corrected prior to beginning Nursing 281.**
APPENDIX C

APPROVAL LETTER
June 2, 1982

To Whom It May Concern:

Bernice Metcalf has my permission to use the Lewis-Clark State College division of nursing students and graduates as subjects for her thesis topic.
APPENDIX D

PERCENTAGE DISTRIBUTION OF UNCONDITIONALLY AND PROVISIONALLY ADMITTED STUDENTS ACCORDING TO LETTER GRADE FOR NURSING I
Appendix D

Percentage Distribution of Unconditionally and Provisionally Admitted Students For 1976, 1979 and 1980 According to Letter Grades For Nursing I

<table>
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<th>Year</th>
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<th>B Number</th>
<th>B Percent</th>
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<th>C Percent</th>
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*Unconditional  
**Provisional  
***Sample
APPENDIX E

PERCENTAGE DISTRIBUTION OF UNCONDITIONALLY AND PROVISIONALLY ADMITTED STUDENTS ACCORDING TO LETTER GRADE FOR NURSING II
Appendix E

Percentage Distribution of Unconditionally and Provisionally Admitted Students For 1976, 1979 and 1980 According to Letter Grades For Nursing II

| Year | Status | N   | A Number | A Percent | B Number | B Percent | C Number | C Percent | Mean
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*Unconditional
**Provisional
***Sample
APPENDIX F

PERCENTAGE DISTRIBUTION OF UNCONDITIONALLY AND PROVISIONALLY ADMITTED STUDENTS ACCORDING TO LETTER GRADE FOR NURSING III
Appendix F

Percentage Distribution of Unconditionally and Provisionally Admitted Students For 1976, 1979 and 1980 According to Letter Grades For Nursing III

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*Unconditional
**Provisional
***Sample
APPENDIX G

PERCENTAGE DISTRIBUTION OF UNCONDITIONALLY AND PROVISIONALLY ADMITTED STUDENTS ACCORDING TO LETTER GRADE FOR NURSING IV
### Appendix G

**Percentage Distribution of Unconditionally and Provisionally Admitted Students For 1976, 1979 and 1980 According to Letter Grades For Nursing IV**

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*Unconditional  
**Provisional  
***Sample