AN ANALYSIS OF ACHIEVEMENT AND SELF-CONCEPT SCORES OF THE SEVENTH AND EIGHTH GRADE STUDENTS AT THE CONCHO SCHOOL 1968-1970

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CHAPTER I

GENERAL BACKGROUND

Two Bureau of Indian Affairs Boarding Schools, the Cheyenne-Arapaho School and the Concho Demonstration School, were located five miles north of El Reno prior to the fall of 1968. The physical plant of both schools, as well as the dormitories, were dilapidated. The effectiveness of the faculties was limited due to the lack of adequate equipment, materials, and books. Both schools were closed at the end of the spring semester in May, 1968.

The Cheyenne-Arapaho School and the Concho Demonstration School were combined into one school called the Concho School. When the Concho School opened for the fall semester of 1968, a new $2,500,000 physical plant was located a short distance from the old schools. The new plant consisted of an academic building with a gymnasium and auditorium combined, a cafeteria with a recreation center underneath, and two new dormitories. Each dormitory had a living room, rumpus room, and small kitchen. Four students were housed in each room with these facilities provided: two sets of bunk beds, a table and chairs for studying, and two large closets. The new school had an enrollment of 250 students in grades one through nine.

All students who attended a Bureau of Indian Affairs School could be classified as disadvantaged or underprivileged Indian youth. Before a student could attend a Bureau of Indian Affairs School, he must have

met specific education and/or social criteria. Students who were characterized by one or more of the following characteristics could be admitted to a federal boarding school.

A. Education Criteria

(1). Those for whom a public or federal day school is not available. Walking distance to school or bus transportation is defined as one mile for elementary children and 1½ miles for high school.

(2). Those who need special vocational or preparatory courses, not available to them locally, to fit them for gainful employment. Eligibility under this criterion is limited to students in high school grades 9 through 12.

(3). Those retarded scholastically three or more years, or those having pronounced bilingual difficulties for whom no provision is made in available schools.

B. Social Criteria

(1). Those who are rejected or neglected for whom no suitable plan can be made.

(2). Those who belong to large families with no suitable home and whose separation from each other is desirable.

(3). Those whose behavior problems are too difficult for solution by their families or through existing community facilities and who can benefit from the controlled environment of a boarding school without harming other children.

(4). Those whose health or proper care is jeopardized by illness of other members of the household. (1, p. 3)

The students who were admitted to a federal boarding school had a minimal level of education. Many came from broken homes and/or conditions of poverty. Most had failed to adjust to a public school situation. Several of the Concho students had been in correction schools or had been to a federal boarding school such as Concho as an alternative to a correction school.

The students who were admitted to Concho came from several different tribes and states; however, the majority of the students came from Oklahoma and belonged to the Cheyenne-Arapaho tribe.

Purpose of the Study

The Bureau of Indian Affairs believed that their boarding schools needed the latest research, innovations, experimental programs, and equipment and facilities brought to their students. Southwestern State College, Weatherford, Oklahoma, entered into a contract with the Bureau of Indian Affairs and the Concho Boarding School under Title I - Health, Education and Welfare for a project entitled "The Concho School" for the 1968-69 school year. The basic objective of the program was

> With maximum effort, to move each child in Concho School to an appropriate position of educational competence and personal-social adjustment based on total resources available. (2, p. i)

The area of emphasis of the total program was

> A college interdisciplinary approach to provide on-site consultations, demonstrations, and cooperation of effort, thereby providing the latest innovative and research tested programs (fused into one total educational experience) for disadvantaged Indian children. (2, p. i)

Southwestern State College consultants served in the following areas: Administration, Art, Communication Skills, Elementary Science, Health, Physical Education and Recreation, Home Economics, Industrial Arts, Instructional Media, Junior High Science, Library, Mathematics, Music, Personal Problems and Sex Education, Psychology, Pupil Personnel Services, Reading, Social Studies, and Typewriting. Consultants visited the Concho School at least once a week to assist in improving lesson plans, to offer suggestions on new methods of teaching, to

demonstrate methods of utilizing new equipment, to do demonstration teaching, and to assist the Concho faculty in motivating their students. The problem involved in this study was to analyze the enriched program and its effects upon achievement and self-concept levels brought by Southwestern State College to the Concho School in grades seven and eight for the 1968-69 school term.

Specific Statement of the Problem

The purpose of this study was to determine whether the students who attended the Concho School 1968-70 changed their achievement level or their self-concept as a result of the influence of the Southwestern State College program.

This dissertation is concerned with measured changes at the .05 level of confidence in the SRA Achievement Series and Tennessee Self-Concept Test of participants in the Concho School (grades 7 and 8) who attended the Concho School from 1968-70. The specific design of this study is to determine if significant changes at the .05 level of confidence for the above tests occurred as measured by a t test.

Two areas were considered in determining whether significant changes occurred. These areas were the self-concept (Total P and the Self-Criticism scores) and the achievement levels (arithmetic, language arts, reading, science, social studies, and total) as measured by the Tennessee Self-Concept Test and the SRA Achievement Series. The population included all seventh and eighth grade students who attended the Concho School during 1968-70 and took either the SRA Achievement Series and/or the Tennessee Self-Concept Test.

Hypotheses to Be Investigated

Ho_1 There is no significant difference between the mean scores at the .05 level of confidence when comparing the 1968-69 seventh grade students and the 1969-70 eighth grade students on the basis of the SRA Achievement Series.

Ho_2 There is no significant difference between the mean scores at the .05 level of confidence when comparing the 1968-69 eighth grade students and the 1969-70 ninth grade students on the basis of the SRA Achievement Series.

Ho_3 There is no significant difference between the mean scores at the .05 level of confidence when comparing the 1969-70 eighth grade students and the new eighth grade students who attended in 1969-70 on the basis of the SRA Achievement Series.

Ho_4 There is no significant difference between the mean scores at the .05 level of confidence when comparing the 1969-70 ninth grade students with the ninth grade students who attended in 1969-70 on the basis of the SRA Achievement Series.

Ho_5 There is no significant difference between the mean scores at the .05 level of confidence when comparing the 1968-69 seventh grade students who spent the summer at the Concho School and returned to the classroom at Concho in the fall of 1969 on the basis of the SRA Achievement Series.

Ho_6 There is no significant difference between the mean scores at the .05 level of confidence when comparing the 1968-69 eighth grade students who returned home for the summer and then returned to the Concho School in the fall of 1969 as compared to those eighth grade

students who spent the summer at the Concho School and returned to the classroom at Concho in the fall of 1969 on the basis of the SRA Achievement Series.

Ho_7 There is no significant difference at the .05 level of confidence between the mean scores of the 1968-69 experimental seventh grade students and the national norms when compared on the basis of the SRA Achievement Series.

Ho_8 There is no significant difference at the .05 level of confidence between the mean scores of the 1968-69 experimental eighth grade students and the national norms when compared on the basis of the SRA Achievement Series.

Ho_9 There is no significant difference at the .05 level of confidence in the Self-Concept mean scores of the 1968-69 seventh grade students and 1969-70 eighth grade students.

Ho_{10} There is no significant difference at the .05 level of confidence in the Self-Concept mean scores of the 1968-69 eighth grade students and the 1969-70 ninth grade students.

Ho_{11} There is no significant difference at the .05 level of confidence in the Self-Concept mean scores for the 1969-70 eighth grade students as compared with the new eighth grade students who attended the Concho School in 1969-70.

Ho_{12} There is no significant difference at the .05 level of confidence in the Self-Concept mean scores of the 1969-70 ninth grade students as compared with the new ninth grade students who attended the Concho School in 1969-70.

Ho_{13} There is no significant difference at the .05 level of confidence in the Self-Concept mean scores of the 1968-69 seventh grade

students who returned home for the summer and then returned to the Concho School in the fall of 1969 as compared with those seventh grade students who spent the summer at the Concho School and returned to the classroom at Concho in the fall of 1969.

Ho_{14} There is no significant difference at the .05 level of confidence in the Self-Concept mean scores of the 1968-69 eighth grade students who returned home for the summer and then returned to the Concho School in the fall of 1969 as compared with those eighth grade students who spent the summer at the Concho School and returned to the classroom at Concho in the fall of 1969.

Ho_{15} There is no significant difference at the .05 level of confidence between the 1968-69 experimental seventh grade students and the national norms when compared on the basis of the Tennessee Self-Concept Test.

Ho_{16} There is no significant difference at the .05 level of confidence between the 1968-69 experimental eighth grade students and the national norms when compared on the basis of the Tennessee Self-Concept Test.

Limitations

This study was limited to those students who were in the seventh and eighth grades who attended the Concho School and took the SRA Achievement Series and/or the Tennessee Self-Concept Test during 1968-70. Inferences to other Indian students should be limited to students with similar characteristics who attend Bureau of Indian Affairs Schools. A portion of the population was excluded from the study because certain students did not take both the pre-test and the post-test

for either the SRA Achievement Series and/or the Tennessee Self-Concept Test. The study was further limited because of the students' reading achievement. The Tennessee Self-Concept Test is written on a sixth grade reading level. It appeared that certain students in the study were not reading at the sixth grade level. Furthermore, the study is limited in that variables of improved instruction, environment, and materials at the Concho School during 1969-70 were not controlled.

Definition of Terms

Tennessee Self-Concept Scores:

A. Total Positive (P) Scores: These scores reflect the overall level of self-esteem. The Total P Scores are composed of three groups:

> (1) This is what I am, (2) This is how I feel about myself, and (3) This is what I do....Persons with high scores tend to like themselves, feel that they are persons of value and worth, have confidence in themselves, and act accordingly. People with low scores are doubtful about their own worth, see themselves as undesirable often feel anxious, depressed, and unhappy, and have little faith or confidence in themselves. (3, p. 2)

B. Self-Criticism Scores: These scores indicate an ability to criticize oneself.

> These are mildly derogatory statements that most people admit as being true for them. Individuals who deny most of these statements most often are being defensive and making a deliberate effort to present a favorable picture of themselves. High scores generally indicate a normal, healthy openness and capacity for self-criticism. Extremely high scores (above the 99th percentile) indicate that the individual may be lacking in defenses and may in fact be pathologically undefended. Low scores indicate defensiveness and suggest that the Positive Scores are probably artificially elevated by this defensiveness. (3, p. 2)

National Norms for the Tennessee Self-Concept Test:

> The standardization group from which the norms were developed was a broad sample of 626 people. The sample included people from various parts of the country and age ranges

> from 12 to 68. There were approximately an equal number of both sexes, both Negro and white subjects, representatives of all social, economic, and intellectual levels and educational levels from 6th grade through the Ph.D. degree. Subjects were obtained from high schools and college classes, employers at state institutions, and various other sources. (3, p. 13)

SRA Achievement Scores: The test in the SRA Achievement Series measured the educational development of the students in the basic areas of the curriculum from grades three through nine. The areas tested were: Arithmetic Reasoning, Concepts, Compuation, and Total Arithmetic; Language Arts Capitalization, Punctuation, Grammatical Usage, Spelling, and Total Language Arts; Reading Comprehension, Vocabulary and Total Reading; Science; Social Studies, and Composite.

Experimental Group: This group is defined as those students who attended the Concho School during the school year of 1968-69 and were in either the seventh or eighth grade.

Control Group: This group is defined as those students who attended the Concho School only during the school year of 1969-70 and were in either the eighth or ninth grade.

Bureau of Indian Affairs Schools: Federal boarding schools are provided for those Indian students who meet their established entrance requirements.

Concho School: This is a Bureau of Indian Affairs boarding school located five miles north of El Reno, Oklahoma.

CHAPTER II

REVIEW OF LITERATURE

Students who attend Bureau of Indian Affairs boarding schools usually have educational or social deficiencies. The objective of this study was to determine whether an enriched educational program presented by Southwestern State College could assist these disadvantaged and culturally deprived Indian students prepare to be incorporated into the main stream of society. This chapter is designed to review the literature on the background of deprived and culturally disadvantaged youth and studies dealing with self-concept, achievement, and pertinent research studies concerning Indian students.

In the review of the literature, many studies were found which were indirectly concerned with similar problems such as those encountered at the Concho School. However, no studies were found which dealt specifically with disadvantaged Indian youth in a boarding school environment where the opportunity to benefit from an enriched educational program was offered to Indian students. The review of the literature is separated into five areas: (1) general background, (2) self-concept, (3) academic achievement, (4) Indian students, and (5) summary.

General Background

A sizeable portion of the population can be classified as either disadvantaged or culturally deprived. This portion of the population

cannot be restricted to any particular race, color, creed, geographic location, or social class; however, Riessman (4) stated that the majority of the disadvantaged or culturally deprived come from cultural or racial minorities. Other dimensions which characterize the culturally deprived or disadvantaged as stated by Havinghurst in Durham (5) indicated that the deprived have different ideas concerning the basic philosophy of life. The deprived tend to be lacking in several areas. They are not given enough love and affection; they do not have enough food to eat; educational reading material and opportunities are not provided in their homes; and in many cases a young child does not have anyone to model after or imitate as he grows to adulthood. Tuckman (6) stated four generalizations concerning characteristics of the deprived. Tuckman's generalizations were very similar to those mentioned by Havinghurst. He stated that the culturally deprived often are underfed, have inadequate clothing, and are in need of medical treatment. Tuckman (6) further pointed out that the parents in culturally deprived homes have a limited education and are not aware of the many educational objects which could help their children at home. Another characteristic of the culturally deprived is the lack of motivation. The culturally deprived youth seem to have no desire to achieve or reach goals. The final point that Tuckman (6) made had to do with attitudes. The culturally deprived youth tend to have negative attitudes toward themselves and others.

Williams (7) visited in the homes of several disadvantaged children. She found that most parents wanted their children to go to school and obtain a good education because they (the parents) did not have the opportunity to go to school.

Lueptow (8) found that the disadvantaged or deprived youth tend to do poorly in school and many times drop out of school. He also found that the disadvantaged have had more unusual types of experiences before they start to school. Coleman (9) concurred with Lueptow in that students who are disadvantaged or deprived tend to drop out of school often before they reach the ninth grade. In many cases these students are overage. Broudy (10) felt there should be more concern for the culturally deprived because of the rising drop-out rate and the delinquency problem.

Disadvantaged students who have special problems can usually be detected in the classroom. When disadvantaged students are tested by standardized testing instruments, they are found to be significantly below average. Research conducted by Gordon and Wilkerson (11) and cited by the California Advisory Committee on Compensatory Education stated that after a student has been tested and found to be below average and if one of three other criteria apply to him, then the student can be classified as a disadvantaged youth. The three criteria are low family income, social outcast, and living in an area where educational facilities are inadequate.

Teachers of disadvantaged or culturally deprived youth usually do not expect as much from them as they do from a middle-class student, according to Glasman (12). Many teachers of the disadvantaged enter the classroom with enthusiasm and feel that they are the disadvantaged child's answer. The teacher usually finds that the disadvantaged student does not participate in class discussions nor do routine tasks. Many teachers quit after a year or two because of the frustrating situation. Teachers for the disadvantaged are not only hard to find, but

are limited as to how much they can do for the disadvantaged, according to Koester (13).

Moore (14) stated that culturally deprived youth start to school with a limited number of experiences and a limited vocabulary. Smith (15) agreed that disadvantaged students have difficulty in learning because of several reasons. These can be summarized as speaking and listening difficulties, poor study habits, poor health, frequent absence in school, lack of motivation, and the constant threat of failure.

Specific guidelines should be used in the teaching of the disadvantaged. Rauch (16) listed some specific guidelines in teaching reading to the disadvantaged. These guidelines can be used in teaching any subject to the disadvantaged. A summary of Rauch's guidelines include (1) accept the idea that students can improve, (2) use material that is slightly below their level, (3) make assignments short, (4) know what the students are interested in learning, (5) develop teacher-made tests, (6) use audio-visual materials, and (7) keep class interesting.

Self-Concept

The self-concept includes all the values and attitudes that one has about himself in relationship to his environment. A person's self-concept is how he feels about himself. This feeling can vary to any extent depending upon the situation in which a person finds himself. Basically, however, the self-concept remains the same for an individual.

According to Pietrofesa (17) the self-concept develops in the process of an interaction between an individual and his environment. When an individual enters school, it is important to have a high

self-esteem. Lowther according to Pietrofesa (17) stated that the individual with high esteem does better in school than the individual with low esteem. The self-concept is important in an individual's social adjustment, especially in a school situation.

Landsman (18) stated that the self-concept is usually fairly stable in the pre-school years, but changes take place as the child grows older, especially during the adolescent years. Landsman (18) further stated if a child has a series of frightening or frustrating experiences, he can begin to doubt his self-concept. Hawk (19) agreed with Landsman and stated that the self-concept develops from early childhood. He further pointed out that a change in one's self-concept is very gradual and that acceptance is the key in improving self-concept.

Combs and Snygg (20) also did research on the development of self-concept. Combs and Snygg (20) stated that how individuals act in a given situation depends on how they view themselves and the situation in which they are involved. The self-concept of an individual begins to develop in a child's life at the time of birth. Combs and Snygg (20) further stated that a child needs his family to guide him in developing the basic concepts of self which could guide his behavior for the rest of his life. Any traumatic event in the life of a child could cause the development of his self-concept to become distorted. If these traumatic events are not handled effectively by the family, then a child could show symptoms of developing a low self-concept.

Other self-concept theories or ideas include Raimy's (21) self-concept theory. He stated that a person reacts according to the concept or role that best fits him. Lecky's (22) theory of self-consistency and Cameron's (23) concept of role-taking substantiated the

results of Raimy.

The self-concept seems to change even though the changes are very slight and require an extended period of time. It is the opinion of Kipnis (24) that there is a relationship in changing self-concepts and the perception of others. Festinger's social process theory according to Kipnis (24) should be viewed in relationship to the changing of an individual's self-concept. Changes in self-concept should be studied in relation to how one perceives his friends. Festinger's theory as reviewed by Kipnis (24) stated that individuals view their friends as having characteristics more similar to themselves as opposed to people they like less. When an individual makes friends with a person who is different from himself, he tends to be uncertain of his own personality traits. Self-evaluations change in order for an individual's self-concept to be more like that of individuals who have a different self-concept.

The self-concept of the poverty-stricken or disadvantaged child which is developed is different from that of the middle-class child. According to Caliguri (25) the disadvantaged child usually lives in an environment where social skills are not as important as they are in the middle-class environment. Caliguri (25) further pointed out that the disadvantaged child's self-concept shows more signs of physical and verbal aggression than does that of the middle-class child.

Hamachek (26, pp. 18, 19) cited some signs of negative and positive self-concept. The negative signs of self-concept are

1. Sensitivity to criticism
2. Overresponsiveness to praise
3. Hypercritical attitude
4. A 'nobody likes me' feeling
5. Negative feelings about competition

6. A general tendency toward seclusiveness, shyness, and timidity

Hamachek (26, p. 19) further pointed out that the family can be fairly certain that their children are developing positive self-concepts if they tend to display the following signs of positive self-esteem:

1. They are able to act on their own best judgement without feeling guilt or regretting their actions when others do not approve of what they have done.
2. They maintain confidence in their capacity to deal with problems even when setbacks and failures occur.
3. They feel equal, rather than superior or inferior, to others as a person.
4. They assume that they are people of interest and value to others.
5. They can accept praise and compliments without embarrassment and with genuine appreciation.
6. They tend to resist the efforts of others, particularly peers, to dominate them.
7. They accept and can admit that they have, on different occasions, a wide range of impulses, feelings and desires, some of which are socially approved and some of which are not.
8. When they find some aspect of behavior in themselves they do not like because it is contrary to their self-concept, they set out to change it.

Washburn (27) stated that schools need to provide opportunities for students to develop a positive self-concept. These opinions involve (1) meeting physical needs immediately, (2) avoiding disapproval, (3) accepting oneself, and (4) attaining social status.

Strong and Feder (28) compiled a critique of the literature on the measurement of self-concept. Up to the time of the review of the literature some fifteen different instruments had been developed to measure some phase of the individual's self-concept. These measuring instruments include these areas of testing: (1) Q Technique, (2) Likert-Type Rating Method, (3) Free Response Methods, and (4) Check Lists.

The Q Technique or the Q Sort involve the sorting of various statements which are on cards. The subject sorts from 70-150 self-reference

statements into piles along a continuum from those statements that are least like him to those that are most like him. The disadvantage of this method is that it is very time consuming.

The Likert-Type Rating Method includes instruments such as the Index of Adjustment and Values, Self-Rating Inventory, Berger Scales, Phillips Questionnaire, Self-Activity Inventory, Sheerer Scale, Jourard Questionnaire, Fey Questionnaire, and the Ewing Personal Rating Form. These methods use a five-point rating scale in which statements are rated from one to five or from "never" or "seldom" to "very often" or "most of the time." The Index of Adjustment and Values Scale measures four variables. These are (1) self-concept, (2) acceptance of self, (3) ideal self, and (4) the discrepancy between the ideal self and the real self. The Self-Rating Inventory has twenty-five traits that the subject uses to rate himself. The Likert Scale involves "private self," "positive self," "negative self," and the "social self." The Berger Scale has thirty-six statements on self-acceptance and the acceptance of others.

The Phillips Questionnaire has fifty items which relate to self-attitudes and attitudes toward others. The Self-Activity Inventory is composed of fifty-four statements pertaining to the arousal of hostility, achievement, sexual, and dependency needs. The Sheerer Scale measures attitudes toward self and others. The Jourard Questionnaire uses a series of forty personality traits. The Fey Questionnaire measures attitudes of self-acceptance, acceptance of others, and the readiness for therapy. The Ewing Personal Rating Form uses adjectives to measure changes. According to Strong and Feder (28) one of the limitations of the Likert-Type Rating Methods is that the subjects taking

one of the scales tend to mark all of their responses in the middle of the scale or to one extreme.

The Free Response Method uses questions or open-ended statements. Two such techniques are the W-A-Y Technique and the Incomplete Sentence Blank. The limitation of this method is the difficulty in rating or quantifying a free response.

The Check Lists involve the student merely checking the items or statements which apply to the individual. The Interpersonal Check Lists, the Matteson Self-Evaluation Scale, and the Merrill and Heathers Checklist all involve the student checking the objectives which apply to him. The limitation of using check lists is that the responses are checked as either all or none, and the relationship between responses can not be determined.

Besides these specific measuring devices for the self-concept, others of outstanding value have been developed. One of these is the Tennessee Self-Concept Test, as developed by William H. Fitts. This test has a five-point scale ranging from "completely false" to "completely true." Hamner (29, pp. 3, 4), using the instrument developed by Fitts, stated that the positive scores in the Tennessee Self-Concept Test indicate

> . . . the overall self criticism is reflected in the total positive score which indicates the person's general level of self-esteem. This, in turn, is partitioned into a 3 x 5 matrix of subscores. The three rows are concerned with how the individual describes himself. Row 1 represents his Basic Identity or 'what he is,' as he perceives himself at the most basic level. Row 2 gives a measure of self-satisfaction with his basic identity or how the individual accepts himself. Row 3 deals with the subject's concept of himself as reflected in his own behavior. The three rows then may be seen as focusing on (1) 'What he is,' (2) 'How he feels about it,' and (3) 'What he does.' The five columns deal with the frames of reference the individual used to describe himself.

Column A: Physical Self
Column B: Moral-Ethical Self
Column C: Personal Self
Column D: Family Self
Column E: Social Self

Williams and Cole (30, pp. 479, 480) conducted a study using sixty sixth grade students from a small urban school and twenty students from a rural school. They used the Tennessee Self-Concept Scale for a measure of self-esteem and found

> The subject's attitude toward school was established by presenting a list of 30 adjectives that might be applied to the school experience such as 'interesting,' 'confusing,' 'frustrating,' and asking the subject to rate his school experience as he presently perceived it and as he would like it to be along these dimensions. A positive school-concept was one in which there was little discrepancy between the two evaluations, thus the higher the discrepancy score the poorer the school-concept.
>
> An unpublished social esteem scale asked each child to identify other children whom he would like to take home with him, help him with his homework, see chosen class leader, etc. A child's social status was computed from the number of times he was selected for these various roles by the other students.
>
> Emotional adjustment, intellectual ability, reading achievement, and mathematical achievement were measured by the California Test of Personality, The California Short-Form Test of Mental Maturity, and the Reading and Arithmetic sections of the California Achievement Test Battery, respectively. . . .
>
> A correlation of $-.28$ ($p < .02$) was obtained between scores on the Tennessee Self-Concept Scale and the discrepancy scores on the school-concept instrument. A significant relationship ($p < .05$) of .22 r was also obtained between the self-concept measures and social esteem indices. That the self-concept is highly related to emotional adjustment was confirmed by the .62 r ($p < .001$) between scores on the Tennessee Self-Concept Scale and those on the California Test of Personality. . . . In addition, the analysis revealed a .31 r ($p < .01$) between self-concept and reading achievement, and a .33 r ($p < .01$) between self-concept and mathematical achievement.

Academic Achievement

The self-concept that an individual develops from early childhood

relates to academic achievement. In a study conducted by Fink (31) using twenty matched pairs of boys and twenty-four matched pairs of girls of achievers and underachievers, he found that a desirable self-concept can be associated with high academic achievement and a defective self-concept can be associated with low academic achievement. He further pointed out that this association applies more for boys than for girls.

Brookover, Thomas, and Patterson (32) conducted a study using 1,050 seventh grade students in an urban school system. Negro students were not included in the study because an assumption was made that their self-concept and their academic achievement would differ significantly from the white students. A multiple-choice questionnaire was used to determine whether (1) self-concept is related to academic achievement, (2) self-concept is related to specific subject areas, and (3) self-concept is related to how others perceive one's ability. Using a Guttman Scale, Brookover, Thomas and Patterson (32) found that self-concept is related to academic performance. Furthermore, they concluded that mathematics, social studies, and science are better predictors for males, that social studies is a better predictor for females that have an adequate self-concept, and that there is a positive correlation between an individual's self-concept and how others perceive one's academic ability.

Caplin's (33, p. 16) study focused on academic achievement and self-concept. He found a "significant positive relationship between self-concept and academic achievement." He also found "that children who attend a segregated school have less positive self-concepts than do children attending desegregated schools."

Paschal (34) conducted a study comparing two groups of seventh graders on the Spivack Response Form. The two groups were classified as either having an adequate or inadequate self-concept. One of the hypothesis that was tested dealt with the differences in an adequate and inadequate self-concept in the areas of (1) high overall achievement as measured by a teacher's grades and (2) high grades in mathematics, English, geography, and science. The second hypothesis which was tested stated that those students who had a positive self-concept (1) would have mothers who didn't work, (2) would have fathers who had a professional or a semi-professional job, (3) would be the oldest or only child, and (4) would be females. The results of the study indicates that more students who have a positive self-concept rate higher in overall achievement. However, when the overall achievement was analyzed by specific subjects, no significant differences were found in mathematics. When the second hypothesis was analyzed, the only significant difference was in the variable of being either the oldest or only child.

Borislow (35) found that students who do poorly scholastically do not have an adequate self-concept. He also found that students who have an inadequate self-concept do better when scholastic achievement is not the most important aspect.

Jones and Grieneeks (36) stated that self-perception positively related to scholastic achievement. Walsh (37) found that achievement and self-concept are related when intelligence is held constant. Wattenberg and Clifford (38) reported similar results and also found that whenever a child starts to school for the first time there is no relationship between self-concept and intelligence.

Williams and Cole (30, p. 480) conducted a study using eighty sixth grade students. These students were given the Tennessee Self-Concept Scale, and the California Achievement Test Battery. They found ". . . a .31 r (. < .01) between self-concept and reading achievement, and a .33 r ($p < .01$) between self-concept and mathematical achievement." Further research indicated that ". . . self-concept is a basic causal factor in determining achievement level in school."

Hishiki (39) conducted a study using sixth grade Mexican-American and Caucasian girls. The hypothesis stated that there would not be any difference in the comparison of self-concept and academic achievement in Mexican-American girls in California and Caucasian girls in Georgia. A Self-Concept Scale and Child Self-Description Scale were given to both groups. The girls in California were given the Stanford Achievement Test, and the girls in Georgia took the California Test Battery. Hishiki (39, p. 60) found that the sixth grade Mexican-American girls of California differed significantly in their self-concept from the Caucasian girls of Georgia. "The Mexican-American sixth grade girls with a high self-concept had more success in academic achievement than did the sixth grade girls of similar background with a low self-concept."

Hoyt and Blackmore (40) conducted a study with fifty seventh grade students and their actual and expected reading achievement. The boys did better in their actual achievement until half way through the fifth grade; then they fell below the expected achievement level. When the boys reached the seventh grade, they were almost one-half year behind in reading achievement. The results for the girls were similar except their actual achievement was above their expected achievement until

they reached the sixth grade. The girls were two months below their expected level when they reached the seventh grade. In this study the further in school a student progressed, the further behind they became in reading achievement.

Indians

Roucek (41) stated that the American Indian has been the most oppressed race in the United States because they have been either moved or persecuted since the coming of the white man. Roucek (41) further stated that the Indian leaders feel that educating the young so that they can live away from the reservation is an important goal. There are also conflicts in the education of the American Indian. The American system encourages individualism and competition, while this is just the opposite of what the Navaho Indian children are taught.

Miller (42) found that when Indian children enter a Bureau of Indian Affairs school the children come from different home backgrounds and bring different attitudes and values with them. The goal of the teacher in the Bureau of Indian Affairs school is to help the Indian child in forming his own goals and attitudes from the Indian and the American cultures. Thompson's (43) study has many of the same conclusions as the Miller (42) study. Thompson (43) stated that the main purpose of education for the American Indian is to assist him to participate in the American way of life.

In a dialogue between George D. Fischer, President of the National Education Association, and Walter F. Mondale (44), United States Senator from Minnesota, Indian education was discussed. Some of the pertinent observations which were made included (1) the dropout rate

among Indians is twice the national average; (2) Indian children are from two to three years behind the national norms, and they get further behind as they advance in school; (3) sending a five-year-old to a boarding school thousands of miles from home is not good; and (4) an Indian teacher from the same culture with special preparation to teach Indian children is the ideal teacher, but to find a teacher with even one of these characteristics is difficult.

A review of recent research on American Indian students revealed the following information. In 1958, Coombs, Kron, Collister, and Anderson (45) found that Indian students do very poorly on standardized tests when compared to national norms. As white and Indian students progress from elementary to junior high school, a gap develops in the level of achievement. Smith's (46) and Berry's (47) studies pointed out that in the elementary grades the Indian student is very happy, works hard, and shows interest; but as the Indian student advances through school, he becomes lazy, withdrawn, and loses interest and motivation.

At the University of Kansas in 1951-55, Rupiper (48) conducted an achievement testing program for the Bureau of Indian Affairs using the California Testing Battery. The sample for this study includes 5,502 full-blood Indian students from six Bureau of Indian Affairs Schools and 9,386 white students. When the mean scores for reading, arithmetic, language, and spelling were compared, significant differences at the .05 level of confidence were found in favor of the white students.

Townsend (49, p. 9) conducted a study with reading achievement of eleventh and twelfth grade Indian students. Diagnostic reading tests and the Gates Reading Survey Tests were given.

> Approximately 73 per cent of the eleventh grade, and 65 per cent of the twelfth grade Indian students scored below the twentieth percentile on the Diagnostic Reading Tests. . . when compared to the expected grade level achievement of the national norms.

The Indian students in this study are five years below the national norm in reading achievement.

Lloyd (50, p. 12) conducted a study using selected public schools from Mesa, Arizona. Part of the students came from the Salt River and the Fort McDowell Indian Reservations; other students were classified as non-Indian. The California Tests of Mental Maturity and the California Achievement Test were given in the Mesa Public Schools. Grades three through ten were tested in the areas of reading, arithmetic, English, and spelling. The results of the test indicate that

> As a whole, both the Indian and non-Indian experience their greatest difficulty in the arithmetic area. Whereas the Indian seems to do best in the language portion of the test, the non-Indian seems to do best in the reading area.

The two groups are the closest in achievement in the area of spelling, and the greatest difference occurs in the area of arithmetic reasoning and fundamentals. At the time this study was completed, the Indian population in the Mesa Public Schools did not do well on standardized tests as a group, but there were some individual Indian students who were doing as well as the non-Indian students.

Silvaroli and Zuchowski (51) evaluated the program at the Fort Thomas Schools in Arizona. The school initiated a specific program to aid Indian students in their cultural differences. Over a two-year period the gap between the academic areas did not become any wider, and in the areas of arithmetic reasoning and spelling the gap was significantly reduced. These findings were substantiated by Coombs, Kron,

Collister, and Anderson (45). The narrowing of the gap was attributed, according to Coombs, Kron, Collister, and Anderson (45) to two areas (arithmetic reasoning and spelling) being learned within the school by the rote method.

Coombs, Kron, Collister, and Anderson (45), Townsend (49), and Silvaroli and Zuchowski (51) each found that Indian students have shown the greatest differential from white students in reading readiness and comprehension. Coombs, Kron, Collister, and Anderson (45), and Smith (46) also found that Indian students do better in public schools than in Bureau of Indian Affairs Schools. However, the difference may be attributed to the acceptance of a majority of culturally and educationally deprived Indian students by the Bureau of Indian Affairs Schools.

Spang (52) stated that there are several problems in Indian education. Some of these are (1) lack of money, (2) not meeting the needs of the students, and (3) the need for more Indian teachers.

Summary

Generally these ideas tend to prevail in the literature. The disadvantaged child usually comes from a cultural or racial minority group and tends to drop out of school before he reaches the ninth grade. Also, the disadvantaged child has a different basic philosophy of life. A positive self-concept tends to be associated with high academic achievement and low academic achievement is found for students who have low self-concepts. The Indian student usually falls two to three years behind in his academic achievement when compared to his white contemporaries. Indian students do poorly on standardized tests with their

greatest difficulties occurring in the areas of reading and reading comprehension.

CHAPTER III

DESIGN AND METHODOLOGY

Introduction

The primary objective of this study was to determine whether the students who attended the Concho School in 1968-70 changed their achievement level or their self-concept as a result of the influence of the Southwestern State College Program. The purpose of this investigation was to decide whether significant changes did take place between the experimental group and the control group as measured by pre-test and post-tests. The purpose of this chapter is to discuss (1) description of the Concho School Project as implemented by Southwestern State College, (2) the basic plan of the study, (3) data collection, (4) instrumentation, and (5) the statistical procedures.

The Concho School Project

General Information:

The Concho School was designed to aid culturally deprived Indian youth who have educational or social problems. The basic plan of the Concho School was to help the students re-evaluate their personal lives, raise their academic standards, and prepare themselves to be incorporated into the main stream of society.

Specific Objectives of the Southwestern State College Concho School Project 1968-70:

1. To provide a group of educational personnel working together in the Concho School with these groups:
   A. Bureau of Indian Affairs officials,
   B. Concho administrators, guidance personnel, and classroom teachers,
   C. Southwestern State College administrators, guidance personnel, and consultants.
2. To offer a program:

   > . . . designed to provide an early entry for the disadvantaged Indian child into the mainstream of the American socio-economic culture co-equal in educational opportunity with other American children. . . . (2, p. 6)

3. To emphasize the many contributions of other cultures including those which come from the American Indians.
4. To promote achievement in the academic skills which will aid the Indian student in being incorporated into the main stream of society.
5. To provide the Concho classroom teachers and guidance personnel with the latest equipment and techniques.
6. To assist the Concho students in developing an adequate and acceptable self-concept.
7. To retain the students who attend the Concho School in an academic situation whether it be in a Bureau of Indian Affairs School or in other educational programs.

Academic Program:

The academic program at Concho, as implemented by Southwestern State College, included the assistance in seventeen areas. The areas where Southwestern State College consultants were working with the Concho Faculty included administration; art; communication skills; elementary science; health, physical education, and recreation; home economics; industrial arts; instructional media; junior high science; library; mathematics; music; personal problems and sex education; pupil personnel services; reading; social studies; and typewriting. All of the areas mentioned above were administered in the experimental program to the Concho students in grades seven and eight except elementary science, home economics, and typewriting.

Administration. The area of administration attempted to develop aims and goals for the Concho School. The Concho classroom teachers, administrators, and the Southwestern State College consultant worked together on these goals. The superintendent at the time of the writing of the original proposal for the Concho School Project was not allowed to continue in the capacity. A new superintendent was hired, and the acting superintendent became the on-site coordinator for the project.

Art. No art subjects existed before the Concho Project was funded. Funds were set aside for a qualified art teacher and for a limited number of art supplies.

The art program started slowly because the teacher was not hired until after the fall semester had been in session for a month. The program began in the upper grades and was later introduced to the elementary grades. By the end of the spring semester some students had displayed part of their work.

Communication Skills. The communication skills were primarily concerned with the identification of speaking and listening problems. The Step Listening Test was given as a pre-test and post-test to grades four through nine.

Health, Physical Education, and Recreation. This area involved physical fitness and also worthy use of leisure time. Included in this program were physical exercise, organized sports, arts and crafts, music, social recreation, and other activities. The President's Physical Fitness Test was used for a pre-test and post-test for evaluation of this program.

Industrial Arts. The industrial arts program was divided into three phases. Phase one involved informing the faculty that industrial arts at the junior high level was an academic subject rather than a vocation. Phase two involved completely rearranging the shop into a workable and safe classroom. Materials were provided for these areas: (1) drafting, (2) metal work, (3) wood work, (4) electricity, (5) home mechanics, and (6) crafts. Phase three involved the Southwestern State College consultant plus three student teachers working with the Concho instructor.

Instructional Media. This area was provided so that necessary instructional equipment could be purchased and the Concho faculty could be taught to use it properly. The equipment included projection screens and tables, tape recorders, slide projectors, controlled readers, and language masters. Films, filmstrips, and other audio-visual materials were loaned from the Southwestern State College Instructional Media Center.

Junior High Science. The junior high science program was designed for low achievers. The "inquiry" approach was also used in this program. The main units used were "Mealworms," "Small Things," "Plants," and "Batteries and Bulbs." Field trips, films, science kits, and other instruction techniques and media were used to teach these units. The Processes of Science Test and the SRA Achievement Test were given in a pre-test and post-test.

Library. The library at the beginning of the Concho Project was a conglomeration of the books which had been at the Cheyenne-Arapaho School and the Concho Demonstration School. A librarian was not hired until after the fall semester was in session. Immediately the librarian was faced with the task of using Concho Title II funds without any tools to guide her purchases. The tasks which the librarian and the consultant accomplished were (1) one thousand fifty-three books already owned by the Concho School were classified using the Dewey Decimal System, and H. W. Wison cards were prepared for each book; (2) seven hundred books were ordered at the cost of $1,727.00; and (3) cataloguing cards were ordered for the seven hundred new books.

Mathematics. The mathematics program began first with the Concho teachers. The consultant undertook the task of demonstrating to the Concho faculty the use of modern mathematic concepts. The consultant felt that the Concho teachers needed a mathematics-education course. The area of mathematics was tested on a pre-test and post-test basis using the SRA Achievement Series.

Music. Music in various forms was provided in all grades. The music for the elementary grades was taught in the classroom. The following areas were emphasized: (1) working together as a group,

(2) working as partners, (3) physical coordination, (4) singing, (5) identifying musical instruments, (6) appreciation of masterpieces, and (7) creative activities. In the junior high grades special groups were formed: mixed chorus, girls' glee club, boys' glee club, and a band. Piano lessons were provided for those students who were interested. There were always over twenty-four students taking lessons and others on the waiting list.

Personal Problems and Sex Education. The objectives of the sex education element were (1) to reduce the number of students who drop out of school and (2) to raise the standards of behavior. Before the Concho Project was initiated, the Concho School nurse held monthly classes on smoking, puberty, venereal disease, alcoholism, and glue sniffing.

A sex education curriculum was developed especially for the Concho School. Short units were taught in the classroom by the teachers with special assistance from the school nurse, guidance counselors, and the consultant. Group guidance classes, special programs given by the nurse, and a workshop for dormitory aides provided the core of the program. Special films and filmstrips were shown and discussed. Films shown included "Learning About Sex and Love," "Growing Up, From Childhood to Maturity," "Having a Baby," "Values for Teenagers: The Choice Is Yours," "Venereal Disease: A Present Danger," "Think of Others First," "Narcotics: Uses and Abuses," "LSD: Worth the Risk," and "The Real Trip."

Pupil Personnel Services. The objectives of these services were (1) to develop in-service workshops, (2) set up a guidance committee, (3) identify pupil needs, and (4) to serve those students with special

problems. Through weekly visits with the guidance counselors, dormitory supervisors and aides, classroom teachers, and the administration, an attempt was made to accomplish the objectives.

An extensive testing program was established. Tests given included:

1. SRA Achievement Battery
2. Tennessee Self-Concept Test
3. SRA Primary Mental Abilities Test
4. STEP Listening Test
5. What I Like to Do Inventory
6. Kuder Interest Inventory
7. Processes of Science Test
8. Macquarrie Test for Mechanical Ability
9. Pictorial Reasoning Test
10. Design Judgement Test

Additional materials which were purchased and utilized by the Concho School included: (1) SRA Occupation and Career Kits, (2) Wechsler Individual Testing Kits, (3) guidance books, and (4) a one-way mirror for the conference room.

Special psychological services were provided on Saturdays for those students referred to the consultant by the guidance counselors.

Reading. The reading program emphasized these areas: (1) to improve the total reading program, (2) to develop special reading skills, and (3) to develop interests which will last a lifetime. A special reading teacher was available for those students in grade seven who had special reading problems. Special reading programs were also made available in the dormitories.

Social Studies. The social studies program was designed for the junior high grades. Attempts were made to make the students well informed citizens. Units were prepared on the state histories of Alaska and Hawaii as well as several South American countries. Units on Indian culture and tribes were also incorporated into the plan of study. Since 1968-69 was the year for a national election, the students were interested in studying politics. Many group activities such as panel discussions and oral reports were used in the teaching of various units. The consultant was transferred from social studies to reading at the end of the first semester because of the desperate need in that area.

The Basic Plan for the Study

The basic plan was to obtain data on the students who attended the Concho School in 1968-70 in order to determine if significant changes occurred between the pre-test and the post-test. The primary objective of this study was to determine whether the students who attended the Concho School in 1968-69 had significant changes in achievement levels and self-conception levels as a result of the influence of the Southwestern State College program.

The experimental group included 1968-69 Concho students in the seventh and eighth grades who took either the SRA Achievement Series or the Tennessee Self-Concept Scale. The experimental group received the impact of the Southwestern State College intensive program to improve the achievement and self-conception levels of the Concho students.

The 1969-70 control group included students who did not attend the Concho School in 1968-69. These students were in the eighth and ninth grades and took either the SRA Achievement Series or the Tennessee

Self-Concept Scale during both the fall and spring semester of 1969-70. The control group did not receive the impact of the intensive Southwestern State College program of 1968-69. These students were not in the Concho environment during the project, nor did they receive marginal benefits except for the potential carryover in improved instruction, better materials, and other conditions that remained in 1969-70.

The 1969-70 experimental group included students who attended the Concho School in 1968-69 and participated in either the SRA Achievement Series or Tennessee Self-Concept Scale testing program of 1968-69. These students were in the eighth and ninth grades and took either the SRA Achievement Series or the Tennessee Self-Concept Scale during both the fall and spring semesters 1969-70. The number of students in this study is included in Table I. The number of students varied from the SRA Achievement Series to the Tennessee Self-Concept Test. Since the tests were administered on different days, certain students were not present for both the SRA Achievement Series and the Tennessee Self-Concept Test. Before the SRA Achievement Test was administered the national norms were expected to be greater than the experimental group and the control group mean scores. However any increases in the mean scores of the experimental and control groups would tend to indicate progress even though these groups were not equivalent to the national norms. Also excluded were students who were not administered both the pre-test and post-test. The experimental plan for this study used a pre-post test design.

TABLE I

NUMBER OF STUDENTS IN THE STUDY WHO TOOK THE SRA ACHIEVEMENT SERIES AND THE TENNESSEE SELF-CONCEPT TEST

Year	SRA*	SC**
1968-69		
Experimental Group		
7th Grade	21	18
8th Grade	45	39
1969-70		
Control Group		
8th Grade	13	13
9th Grade	5	4
Experimental Group***		
8th Grade	11	10
9th Grade	18	18

*Science Research Associates Achievement Series

**Tennessee Self-Concept Scale

***Students who attended the Concho School in 1968-69 and returned in 1969-70

Data Collection

Phase I

In September, 1968, the students who were attending the Concho School were administered a pre-test consisting of two instruments:

1. Science Research Associates Achievement Series
2. Tennessee Self-Concept Scale

The Science Research Associates Achievement Series was administered to the entire student body of the Concho School by the writer giving directions over the intercommunication system with the classroom teachers acting as proctors for the examination in each of the homerooms. The Tennessee Self-Concept Scale was administered in the home classroom of each of the Concho grades with the assistance of the homeroom teacher.

Phase II

In late April, 1969, the students who were attending the Concho School were administered the post-test on these instruments: SRA Achievement Series and the Tennessee Self-Concept Scale. The procedures for administering the examinations for the post-test were the same as those used for the pre-test.

Phase III

In September, 1969, the testing procedure utilized in September, 1968, was administered to both the experimental and control groups.

Phase IV

In late April, 1970, the testing procedure utilized in April, 1969, was repeated. Again both experimental and control groups were examined.

Data Analysis

An analysis using the t test was used to compare the pre-test and post-test mean scores of the experimental group and the control group on the SRA Achievement Series and the Tennessee Self-Concept Scale. The experimental group and the national norm mean scores were also compared for both tests. However, from the beginning of the study the national norms for the SRA Achievement Series were recognized as being substantially greater than the means of the experimental and control groups.

Instruments Used

SRA Achievement Series:

This instrument was selected to measure the achievement level of the students who were attending the Concho School at the time of this study. The SRA Achievement Series began in 1954. "The emphasis has been on the measurement of broad understandings and general skills." (53, p. 2) Since 1954 the achievement series has been revised because of curriculum changes. The 1964 Multilevel Edition Forms C and D were used in this study.

The purposes of the achievement series are

> (1) To enable teachers and counselors to keep intimately and reliably informed of the educational development of each student . . . . (2) To provide an objective and comprehensive

> description of the educational development of groups of students. . . . (3) To provide a means for curriculum evaluation and planning. (53, p. 2)

The SRA Multilevel Achievement Series measured six content areas. These were (1) arithmetic, (2) language arts, (3) reading, (4) social studies, (5) science, and (6) composite.

The arithmetic area includes three subtest scores (reasoning, concepts, and computation).

> The reasoning, or problem solving, . . . requires the student to identify the facts relevant to a solution, select the arithmetical process to be used, and carry out the computation necessary to arrive at the solution.
>
> The concepts subtest requires the student to translate verbal forms into mathematical symbols. . . .
>
> The computation subtest measures the student's ability to apply the mechanics of computation. (53, p. 7)

The area of language arts includes the subtest scores of capitalization and punctuation, grammatical usage, and spelling.

> The capitalization and punctuation subtest measures the use of capital letters . . . of apostrophes . . . of quotation marks, of semicolons, and of hyphens. Usage items involved common grammatical errors. . . . The spelling subtest measures mastery of the basic knowledge of word structure by means of a recognition test. (53, p. 7)

The area of reading includes the subtest scores of comprehension and vocabulary. The area of comprehension involves reading a selection or story and then answering questions pertaining to the facts developed in the reading. The vocabulary tests deals with words in the story or selection which are underlined. The students are asked to select the correct meaning for the word as used in the story.

The social studies yields only one test score. "The social studies test measures understanding and application of representative principles drawn from geography, history, government, and the other social science. . . ." (53, p. 5)

The area of science yields only one test score. "The science test measures the student's knowledge and understanding of certain representative facts and principles of science." (53, p. 5)

A composite raw score is derived by using the total from each area and adding the results together. The raw score for each tested area can be translated into either a grade equivalent score or a percentile rank. The grade equivalent is composed of a two part number such as 8-1. The number before the dash indicates the grade level of the student and the number after the dash represents that portion of the academic year the student was tested. There are nine intervals in a school year. Therefore, a student who is in the eighth grade at the beginning of a school year who scores a grade equivalent score of 8-1 would be classified as average when compared to national norms. But if the student was in the ninth grade and had a grade equivalent score of 8-1, he would be classified as below-average when compared to national norms.

Percentile scores according to the SRA Interpretation Manual are more useful than grade-equivalent scores in determining a student's performance. "The percentile score assigned to a raw score at a given grade level represents the percentage of students at this grade level in the norm group who obtained raw scores lower than this." (53, p. 11) For example, if a seventh grade student had a percentile of eighty percent at the beginning of the school year, this would mean that he scored higher than eighty percent of the beginning eighth grade students when compared to the national norms. The norm group was recognized as being greater than the experimental and the control groups in the study.

Tennessee Self-Concept Scale:

This instrument was selected to measure the self-concept of the students who were attending the Concho School at the time of the study. Work on this scale was begun in 1955 by William H. Fitts, Ph.D., with the Tennessee Department of Mental Health.

> The original purpose was to develop a research instrument that might contribute to the difficult criterion problem in mental health research. A simple scale that was widely applicable, well standardized, and multi-dimensional in its description of the self-concept was needed. The self-concept has become a popular and important means of studying and understanding human behavior. (3, p. 1)

The Tennessee Self-Concept Scale is composed of one hundred statements. The student answers the questions as though he were describing himself to himself. The Scale is designed to yield an individual's own personal opinion about himself. The Scale can be given to anyone who is twelve years of age or older and who has a sixth grade reading level.

This test gives four general scores of self-concept; only two of these scores were used in the study -- the Self-Criticism Score (SC) and the Total Positive Scores (Total P).

> The Self-Criticism Score (SC). This scale is composed of 10 items. These are all of mildly derogatory statements that most people admit as being true for them. Individuals who deny most of these statements most often are being defensive and making a deliberate effort to present a favorable picture of themselves. High scores generally indicate a normal, healthy openness and capacity for self-criticism. Extremely high scores (above the 99th percentile) indicate that the individual may be lacking in defenses and may in fact be pathologically undefended. Low scores indicate defensiveness and suggest that the positve scores are probably artificially elevated by this defensiveness.
>
> Total P. Score. This is the most important single score on the Counseling Form. It reflects the overall level of self-esteem. Persons with high scores tend to like themselves, feel that they are persons of value and worth, have confidence in themselves, and act accordingly. People with low scores are doubtful about their own worth, see themselves as undesirable, often feel anxious, depressed, and

> unhappy, and have little faith or confidence in themselves.
>
> If the Self-Criticism (SC) score is low, high P Scores become suspect and are probably the result of defensive distortion. Extremely high scores (generally above the 99th percentile) are deviant and are usually found only in such disturbed people as paranoid schizophrenics who as a group show many extreme scores, both high and low. (3, p. 2)

The norms for the Tennessee Self-Concept Scale were developed from a sample of 626 subjects between the ages of 12 and 68. The subjects were both males and females, white and Negro, from all socio-economic levels, and educated from sixth grade to Ph.D. Research conducted by Sundby (54), Gividen (55), Hall (56), and Fitts (3) suggest different norms are not needed for age, sex, race, or other variables.

The mean, standard deviations, and reliability coefficients for the self-criticism score are 35.54, 6.70, and .75 respectively. These scores for the total positive are 345.57, 30.70, and .92 respectively. The reliability for the Tennessee Self-Concept Scale was established on a test-retest with 60 college students over a two-week period (3).

The Tennessee Self-Concept Scale has been correlated with the scores on the Minnesota Multiphasic Personality Inventory (MMPI) and with the scores on the Edwards Personal Preference Schedule. The MMPI and the Edwards Schedule have a correlation of .28 and .61 for the Total P Score with .26 and .33 for the self-criticism score, when computed by a Pearson product moment correlation coefficient (r) (3). According to Fitts (3), Searles used a tetrachoric correlation between self-concept and family relations on the Kell-Hoefline Incomplete Sentence Blank and found the correlation for self-criticism to be .41 and .58 for the Total P Score.

Statistical Procedure

The purpose of this section is to present the statistical procedures utilized in testing the null hypotheses. The Student t test for significant differences was utilized between the following groups: (1) comparison of the 1968-69 experimental students and the 1969-70 experimental students, (2) comparison of the 1969-70 experimental students and the 1969-70 control students, (3) comparison of the experimental students who remained at Concho during the summer of 1969 and those who were not at Concho during the summer of 1969, (4) finally, comparison was made of the 1968-69 students and national norms.

The Southwestern State College Computer Center was utilized to analyze the data. Data for each student was coded and punched on IBM cards. (The code sheet is shown in Appendix A.)

It was assumed that no positive relationship existed between the data of the groups. Furthermore, the groups were not matched pairs. Therefore, two t models were utilized for the statistical analysis. The first model was a separate variance t, while the second model was a pooled variance t.

A test for homogeneity of variances was utilized to determine if variances were significantly different between themselves. In each case the null hypothesis was tested to determine if the variance of one group was equal to the variance of the second group. Also, in each case an F value was computed to determine the statistical differences in the variances. The following procedure is suggested by Popham (57, p. 146):

> In computing F, we simply divide the smaller variance into the larger variance. . . . If the computed value of F equals or exceeds the tabled values, then the null hypothesis should

> be rejected and the hypothesis of variance homogeneity considered untenable. If, on the other hand, the tabled values exceed the F value which has been computed, one may consider the variance to be homogeneous.

Winer (58) and Edwards (59) also suggest that a check for homogeneity of variance would be to divide the smallest variance into the largest variance to find a computed F value.

Richmond (60, p. 186) notes that

> Student's distribution is so named because of the work of William S. Gosset, who wrote under the name 'Student,' since, as an employee of the Guinness Brewery in Dublin, he was required by that firm to use a pseudonym in publishing his results. . . . Tests using Student's distribution have been referred to as 'small sample tests' as distinguished from the 'large sample tests' which use the standard normal distribution.

Hays (61, p. 305) notes that, "In order to find the exact distribution of t, one must assume that the basic population distribution is normal." Hays (61, p. 307) further utilizes a sample of 5 (degree of freedom of 4) to point out that,

> Incorrectly considering a t ratio as a standardized normal variable leads one to underestimate the probability of values in extreme intervals, which are really the only intervals of interest in significance tests.

The statistical techniques utilized involved a two-tailed test of each hypothesis. This technique is preferred by Hays (61, p. 308) ". . . since a very skewed population distribution can make the t probabilities for one-tailed tests considerably in error." Also Hays (61, p. 314) notes that

> In most experimental work it is not true that the experimenter knows about one particular population in advance and then draws a single sample for the purposes of comparing some experimental population to the known population. Rather it is far more common to draw two samples, to only one of which the experimental treatment is applied; the other sample is given no treatment, and stands as a control group for comparison with the treatment groups.

It is noted by Hays (61, p. 322) that

> So long as the sample size is even moderate for each group, quite severe departures from normality seem to make little practical difference in the conclusions reached. . . . When the variances are quite unequal, the use of different sample sizes can have serious effects on the conclusions. . . . One way out of this problem is by the use of a correction: in the value for degrees of freedom. This is useful when one cannot assume equal population variances and samples are of different size.

Thus the two t models referenced above must be employed. The following design suggested by Popham (57, pp. 147, 148) will be utilized in determining which t model and degrees of freedom to employ:

When $n_1 = n_2$ and $s_1^2 = s_2^2$:[1]

Use pooled variance formula and degrees of freedom equal to $n_1 + n_2 - 2$.

When $n_1 \neq n_2$ and $s_1^2 = s_2^2$:

Use pooled variance formula with degrees of freedom equal to $n_1 = n_2 - 2$.

When $n_1 = n_2$ and $s_1^2 \neq s_2^2$:

Use pooled variance formula or separate variance formula with degrees of freedom in each instance equal to $n_1 - 1$ or $n_2 - 1$. (Do not use $df = n_1 = n_2 - 2$.)

When $n_1 \neq n_2$ and $s_1^2 \neq s_2^2$:

Use separate variance formula with tabled t value for a given level of significant determined by averaging t values for (a) degrees of freedom equal to $n_1 - 1$ and (b) degrees of freedom equal to $n_2 - 1$.

CHAPTER IV

PRESENTATION AND ANALYSIS OF DATA

The purpose of this chapter is to present the statistical analysis of the data. The .05 level of confidence was utilized in the determination of significance of all statistical results obtained by the t test. A two-tailed test of significance was utilized in each of the hypotheses. Hypotheses were tested in the order listed in Chapter I.

A summary of the results will be given for each hypothesis as the hypotheses are presented. The design of this chapter involves first the presentation of the statistical analysis of the SRA Achievement Series for both the seventh and eighth grades. Next is the presentation of the self-concept statistical analysis for both the seventh and eighth grades. Within the presentation of the statistical results of the two instruments, four comparisons were made for both the seventh and eighth grades. First, a comparison was made of the 1968-69 experimental students and the 1969-70 experimental students. Second, a comparison was made of the 1969-70 experimental students and the 1969-70 control students. Third, a comparison was made of the experimental students who remained at Concho during the summer of 1969 and those who were not at Concho during the summer of 1969. Finally, a comparison was made of the 1968-69 students and national norms. The summary, conclusions, and recommendations based on the results will be presented in Chapter V.

Data for the comparison groups were prepared for the IBM 1130 computer system and processed in the Southwestern State College Computer Center. Two t models were utilized for the statistical analysis -- a separate variance and a pooled variance. A determination was made of the homogeneity of variance for each of the means tested to determine the homogeneity of variance of the comparison groups. The computed F values which caused rejection of the null hypothesis concerning homogeneity of variances are shown in Appendix B. Testing of hypotheses were utilized to determine if significant differences existed for sixteen null hypotheses where t tests were computed on the SRA Achievement Series and the Tennessee Self-Concept Test for the seventh and eighth grade Concho student comparison groups.

Science Research Associates Achievement Series

Hypothesis 1: There is no significant difference between the mean scores at the .05 level of confidence when comparing the 1968-69 seventh grade students and the 1969-70 eighth grade students on the basis of the SRA Achievement Series.

The comparison group included seventh grade students who participated in the experimental program during both the fall and spring of 1968-69 and who returned to Concho during the fall of 1969-70. Table II indicates the mean SRA Achievement scores and the computed t values for the comparison groups. The 1969-70 experimental eighth grade students had higher mean scores in all SRA areas when compared to the experimental seventh grade students of 1968-69. The null hypothesis was rejected at the .05 level of confidence with a computed t of 3.05 and 2.26 for total arithmetic and composite means when a comparison was

TABLE II

A COMPARISON OF THE SRA SCORES FOR THE FALL 1968-69 SEVENTH GRADE STUDENTS AND THE FALL 1969-70 EIGHTH GRADE STUDENTS

Fall Experimental	Number	Standard Deviation	Mean Score	Grade Equivalent	t
Total Arithmetic					
1968-69	11	7.83	30.82	4.6	3.05**
1969-70	11	7.09	40.55	5.5	
Total Language Arts					
1968-69	11	10.91	59.45	4.5	1.02
1969-70	11	16.43	65.55	5.1	
Total Reading					
1968-69	11	5.85	22.73	4.3	1.71
1969-70	11	9.00	28.27	5.1	
Science					
1968-69	11	5.28	13.55	4.1	1.33
1969-70	11	5.28	16.55	5.7	
Social Studies					
1968-69	11	2.95	12.09	4.1	0.29
1969-70	11	2.94	12.45	4.7	
Composite					
1968-69	11	18.96	138.64	4.3	2.26*
1969-70	11	30.89	163.36	5.3	

*Significant beyond the .05 level

**Significant beyond the .01 level

made of the 1968-69 seventh grade students and the 1969-70 eighth grade students. The total arithmetic mean was also statistically significant beyond the .01 level of confidence. The other SRA Achievement means were not statistically significant at the .05 level of confidence. Since all SRA Achievement means increased for the seventh grade students from the fall of 1968 to the fall of 1969 and the total arithmetic and composite means had statistically significant increases, it appeared that the experimental program was somewhat successful.

Hypothesis 2: There is no significant differences between the mean scores at the .05 level of confidence when comparing the 1968-69 eighth grade students and the 1969-70 ninth grade students on the basis of the SRA Achievement Series.

The second comparison group included the eighth grade students who participated in the experimental program during both the fall and spring of 1968-69 and who returned to Concho during the fall of 1969-70. Table III indicates the mean SRA Achievement scores and the computed t values for the comparison groups. The 1969-70 experimental ninth grade students had higher mean scores in all SRA areas except science when compared to the experimental eighth grade students of 1968-69. Although most of the SRA Achievement means increased, these increases were not statistically significant at the .05 level of confidence. The data suggests that the experimental program for the eighth grade students did not have the impact of the experimental program for the seventh grade students. Perhaps the 1968-69 Concho students might have done better in a different educational environment.

Hypothesis 3: There is no significant difference between the mean scores at the .05 level of confidence when comparing the 1969-70 eighth

TABLE III

A COMPARISON OF THE SRA SCORES FOR THE FALL 1968-69 EIGHTH GRADE STUDENTS AND THE FALL 1969-70 NINTH GRADE STUDENTS

Fall Experimental	Number	Standard Deviation	Mean Score	Grade Equivalent	t
Total Arithmetic					
1968-69	18	12.46	36.11	5.1	
					1.20
1969-70	18	9.67	40.56	6.2	
Total Language Arts					
1968-69	18	15.23	65.22	5.1	
					0.05
1969-70	18	11.31	65.44	6.5	
Total Reading					
1968-69	18	9.77	26.61	5.1	
					0.78
1969-70	18	6.60	28.78	5.8	
Science					
1968-69	18	5.58	14.06	4.7	
					1.24
1969-70	18	3.96	12.06	5.1	
Social Studies					
1968-69	18	4.29	14.06	5.4	
					0.45
1969-70	18	3.93	14.67	6.4	
Composite					
1968-69	18	35.77	156.06	4.9	
					0.52
1969-70	18	25.85	161.50	6.2	

*Significant beyond the .05 level

grade students and the new eighth grade students who attended in 1969-70 on the basis of the SRA Achievement Series.

The 1969-70 eighth grade students participated in the experimental program during both the fall and spring of 1968-69 and returned to Concho during the fall of 1969-70. These students were compared to a control group of eighth grade students who had not attended Concho during either the fall or spring of 1968-69. Table IV indicates the mean SRA Achievement scores and the computed t values for the comparison groups. The mean SRA Achievement scores for the control eighth grade students exceeded the mean SRA Achievement scores for the experimental eighth grade students in all areas except science. There was a failure to reject the null hypothesis at the .05 level of confidence for each of the SRA Achievement areas. It appeared that the control students had higher mean SRA Achievement scores because of their previous academic background. Further, the experimental program did not seem to make a significant contribution to improved academic achievement.

Hypothesis 4: There is no significant difference between the mean scores at the .05 level of confidence when comparing the 1969-70 ninth grade students with the new ninth grade students who attended in 1969-70 on the basis of the SRA Achievement Series.

The 1969-70 ninth grade students participated in the experimental program during both the fall and spring of 1968-69 and returned to Concho during the fall of 1969-70. These students were compared to a control group of ninth grade students who had not attended Concho during either the fall or spring of 1968-69. Table V indicates the mean SRA Achievement scores and the computed t values for the comparison group. The mean SRA Achievement scores for the control ninth grade students

TABLE IV

A COMPARISON OF THE SRA SCORES FOR THE 1969-70
FALL EXPERIMENTAL AND FALL CONTROL
EIGHTH GRADE STUDENTS

1969-70 Eighth Grade	Number	Standard Deviation	Mean Score	Grade Equivalent	t
Total Arithmetic					
Experimental	11	7.09	40.55	5.5	0.48
Control	13	19.23	43.31	5.5	
Total Language Arts					
Experimental	11	16.43	65.55	5.1	0.56
Control	13	21.05	69.92	5.4	
Total Reading					
Experimental	11	9.00	28.27	5.1	1.11
Control	13	8.17	32.15	5.5	
Science					
Experimental	11	5.28	16.55	5.7	0.95
Control	13	2.88	14.85	5.1	
Social Studies					
Experimental	11	2.94	12.45	4.7	1.80
Control	13	4.01	15.08	5.6	
Composite					
Experimental	11	30.89	163.36	5.3	0.81
Control	13	40.10	175.31	5.6	

*Significant beyond the .05 level

TABLE V

A COMPARISON OF THE SRA SCORES FOR THE 1969-70
FALL EXPERIMENTAL AND FALL CONTROL
NINTH GRADE STUDENTS

1969-70 Ninth Grade	Number	Standard Deviation	Mean Score	Grade Equivalent	t
Total Arithmetic					
Experimental	18	9.67	40.56	6.2	0.05
Control	5	11.43	40.80	6.2	
Total Language Arts					
Experimental	18	11.31	65.44	6.5	0.12
Control	5	17.48	66.20	6.5	
Total Reading					
Experimental	18	6.60	28.78	5.8	0.95
Control	5	20.37	37.60	7.2	
Science					
Experimental	18	3.96	12.06	5.1	3.06*
Control	5	5.22	18.60	8.1	
Social Studies					
Experimental	18	3.93	14.67	6.4	0.88
Control	5	6.66	17.40	7.1	
Composite					
Experimental	18	25.85	161.50	6.2	0.75
Control	5	55.39	180.60	6.6	

*Significant beyond the .05 level

exceeded the mean SRA Achievement scores for the experimental ninth grade students group in all areas. There was a failure to reject the null hypothesis at the .05 level of confidence in all SRA Achievement areas except science. The null hypothesis was rejected at the .05 level of confidence with a computed t of 3.06 for science when a comparison was made of the 1969-70 experimental ninth grade students and the 1969-70 control ninth grade students. The control ninth grade students were significantly higher in science than the experimental ninth grade students. Perhaps a contributing factor to the comparative lower achievement in science was the inquiry approach used with the experimental group. Consultants indicated that the inquiry approach is not amenable to conventional testing. It appeared that the control ninth grade students also had higher mean SRA Achievement scores because of their previous academic background. Again, the experimental program did not seem to make a significant contribution to improved academic achievement.

Hypothesis 5: There is no significant difference between the mean scores at the .05 level of confidence when comparing the 1968-69 seventh grade students who returned home for the summer and then returned to the Concho School in the fall of 1969 as compared to those seventh grade students who spent the summer at the Concho School and returned to the classroom at Concho in the fall of 1969 on the basis of the SRA Achievement Series.

The comparison group included seventh grade students who participated in the experimental program during both the fall and spring of 1968-69 and who returned to Concho during the fall of 1969-70. Table VI indicates the mean SRA Achievement scores and the computed t values

TABLE VI

A COMPARISON OF THE SRA SCORES FOR THE 1968-69 SEVENTH GRADE STUDENTS WHO ATTENDED CONCHO DURING THE SUMMER OF 1969 AND THOSE NOT ATTENDING

Fall, 1969 Eighth Grade	Number	Standard Deviation	Mean Score	Grade Equivalent	t
Total Arithmetic					
Not at Concho	10	7.46	40.40	5.4	
					1.15
Attended Concho	2	7.07	47.00	5.8	
Total Language Arts					
Not at Concho	10	17.22	65.00	5.1	
					1.25
Attended Concho	2	14.85	81.50	6.6	
Total Reading					
Not at Concho	10	9.44	28.00	4.9	
					0.83
Attended Concho	2	0.71	30.50	5.5	
Science					
Not at Concho	10	5.54	16.40	4.7	
					0.76
Attended Concho	2	2.12	19.50	6.1	
Social Studies					
Not at Concho	10	3.06	12.60	4.4	
					0.74
Attended Concho	2	4.95	14.50	4.8	
Composite					
Not at Concho	10	32.39	162.40	4.9	
					1.23
Attended Concho	2	28.28	193.00	5.7	

*Significant beyond the .05 level

for the comparison groups. All mean SRA Achievement scores for the seventh grade students who attended Concho during the summer of 1969 were higher than the mean SRA Achievement scores for the seventh grade students who did not attend Concho during the summer of 1969. There was a failure to reject the null hypothesis at the .05 level of confidence for each of the SRA Achievement areas. The data suggests that those students who spent their summer at Concho where they could benefit from a controlled educational environment achieved higher during the fall of 1969 than those students who spent their summer in a different type of environment. However, because the SRA Achievement scores were not statistically significant and the number of students in the comparison group was extremely limited, the preceding conclusion may be untenable.

Hypothesis 6: There is no significant difference between the mean scores at the .05 level of confidence when comparing the 1968-69 eighth grade students who returned home for the summer and then returned to the Concho School in the fall of 1969 as compared to those eighth grade students who spent the summer at the Concho School and returned to the classroom at Concho in the fall of 1969 on the basis of the SRA Achievement Series.

The comparison group included eighth grade students who participated in the experimental program during both the fall and spring of 1968-69 and who returned to Concho during the fall of 1969-70. Table VII indicates the mean SRA Achievement scores and the computed t values for the comparison groups. The mean SRA Achievement scores for the eighth grade students who attended Concho during the summer of 1969 were higher than the mean SRA Achievement scores for those eighth grade

TABLE VII

A COMPARISON OF THE SRA SCORES FOR THE 1968-69 EIGHTH GRADE STUDENTS WHO ATTENDED CONCHO DURING THE SUMMER OF 1969 AND THOSE NOT ATTENDING

Fall, 1969 Ninth Grade	Number	Standard Deviation	Mean Score	Grade Equivalent	t
Total Arithmetic					
Not at Concho	16	10.27	40.63	5.5	
					0.38
Attended Concho	3	5.57	43.00	5.5	
Total Language Arts					
Not at Concho	16	12.04	65.56	5.1	
					1.13
Attended Concho	3	17.62	74.67	5.9	
Total Reading					
Not at Concho	16	6.62	29.19	5.3	
					0.03
Attended Concho	3	8.62	29.33	5.3	
Science					
Not at Concho	16	4.10	12.38	4.1	
					0.23
Attended Concho	3	6.08	13.00	4.4	
Social Studies					
Not at Concho	16	4.16	14.75	5.6	
					0.83
Attended Concho	3	2.52	12.67	5.1	
Composite					
Not at Concho	16	27.33	162.50	5.3	
					1.42
Attended Concho	3	33.29	172.67	5.5	

*Significant beyond the .05 level

students who did not attend Concho during the summer of 1969 in all areas except social studies. The SRA Achievement means were not statistically significant at the .05 level of confidence. Again students in a controlled educational environment tended to have higher achievement scores. However, because the SRA Achievement scores were not statistically significant and the number of students in the comparison group was extremely limited, the preceding conclusion may be untenable.

Hypothesis 7: There is no significant difference at the .05 level of confidence between the mean scores of 1968-69 experimental seventh grade students and the national norms when compared on the basis of the SRA Achievement Series.

The experimental group included seventh grade students who participated in the experimental program during both the fall and spring of 1968-69. Before the test was given the national norms were recognized as being greater than the expected mean scores of the experimental seventh grade students. Table VIII indicates the mean SRA Achievement scores and the computed t values for the comparison groups. All of the mean SRA Achievement scores for the seventh grade national norms were greater than the experimental seventh grade SRA Achievement scores. (As shown by Table VIII, the national norms were statistically different at the .001 level of confidence in all SRA Achievement areas.) All SRA Achievement areas except total language arts and total reading for the experimental seventh grade students were more than one standard deviation below the national norms. The experimental program did not have a significant effect upon the academic achievement of the experimental seventh grade students in comparison to national norms. Table VIII shows the grade equivalent placement for the national norms as

TABLE VIII

A COMPARISON OF THE SRA SCORES FOR THE NATIONAL NORMS AND 1968-69 SPRING EXPERIMENTAL SEVENTH GRADE STUDENTS

1968-69 Seventh Grade	Number	Standard Deviation	Mean Score	Grade Equivalent	t
Total Arithmetic					
National Norm	1096	21.12	66.88	6.8	11.01*
Experimental	21	10.99	39.57	5.4	
Total Language Arts					
National Norm	1096	19.97	82.61	6.9	4.18*
Experimental	21	17.75	66.24	5.1	
Total Reading					
National Norm	1096	17.47	45.86	7.1	4.90*
Experimental	21	8.62	36.29	5.9	
Science					
National Norm	1096	7.42	23.30	7.1	6.71*
Experimental	21	5.24	15.48	4.4	
Social Studies					
National Norm	1096	8.17	23.56	7.2	12.26*
Experimental	21	2.84	15.38	4.8	
Composite					
National Norm	1096	66.14	242.21	7.1	8.55*
Experimental	21	35.98	172.95	5.2	

*Significant beyond the .001 level

well as the seventh grade experimental group.

Hypothesis 8: There is no significant difference at the .05 level of confidence between the mean scores of 1968-69 experimental eighth grade students and the national norms when compared on the basis of the SRA Achievement Series.

The experimental group included eighth grade students who participated in the experimental program during both the fall and spring of 1968-69. Before the test was given the national norms were recognized as being greater than the expected mean scores of the experimental eighth grade students. Table IX indicates the mean SRA Achievement scores and the computed t values for the comparison groups. All of the mean SRA Achievement scores for the experimental eighth grade national norms were greater than the experimental eighth grade SRA Achievement scores. (As shown by Table IX, the national norms were statistically different at the .001 level of confidence in all SRA Achievement areas.) Total arithmetic and composite were the only SRA Achievement areas that were more than one standard deviation below the national norms. Again the impact upon academic achievement of the experimental program appeared to be slight. Table IX shows the grade equivalent placement for the national norms as well as the eighth grade experimental group.

Self-Concept

Hypothesis 9: There is no significant difference at the .05 level of confidence in the Self-Concept mean scores of the 1968-69 seventh grade students and 1969-70 eighth grade students.

The comparison group included seventh grade students who participated in the experimental program during both the fall and spring of

TABLE IX

A COMPARISON OF THE SRA SCORES FOR THE NATIONAL NORMS AND 1968-69 SPRING EXPERIMENTAL EIGHTH GRADE STUDENTS

1968-69 Eighth Grade	Number	Standard Deviation	Mean Score	Grade Equivalent	t
Total Arithmetic					
National Norm	1129	25.08	81.80	7.9	13.50*
Experimental	45	15.85	48.36	5.8	
Total Language Arts					
National Norm	1129	21.42	91.11	7.6	6.31*
Experimental	45	16.20	75.36	5.9	
Total Reading					
National Norm	1129	17.71	52.45	7.7	8.53*
Experimental	45	11.46	37.20	6.2	
Science					
National Norm	1129	8.29	25.97	8.1	9.21*
Experimental	45	5.55	18.02	6.1	
Social Studies					
National Norm	1129	9.55	25.02	8.1	6.88*
Experimental	45	6.33	18.24	6.3	
Composite					
National Norm	1129	73.92	276.35	7.9	11.28*
Experimental	45	44.69	197.18	6.1	

*Significant beyond the .001 level

1968-69 and who returned to Concho during the fall of 1969-70. Table X indicates a comparison of the Self-Concept mean scores and computed t values for the 1968-69 experimental seventh grade students and the 1969-70 eighth grade students. The total positive and self-criticism mean scores for the fall 1968-69 experimental seventh grade students were higher than the total positive and self-criticism mean scores for the fall 1969-70 experimental eighth grade students. There was a failure to reject the null hypothesis at the .05 level of confidence. As the experimental seventh grade students advanced to the eighth grade, they tended to have reduced positive attitudes about themselves. The experimental program did not promote improved Self-Concept scores.

TABLE X

A COMPARISON OF THE SELF-CONCEPT SCORES FOR THE FALL 1968-69 SEVENTH GRADE STUDENTS AND THE FALL 1969-70 EIGHTH GRADE STUDENTS

Fall Experimental	Number	Standard Deviation	Mean Score	t
Total Positive				
1968-69	10	20.64	293.60	
				0.53
1969-70	10	27.61	287.80	
Self-Criticism				
1968-69	10	6.46	35.20	
				1.41
1969-70	10	3.99	31.80	

*Significant beyond the .05 level

Hypothesis 10: There is no significant difference at the .05 level of confidence in the Self-Concept mean scores of the 1968-69 eighth grade students and the 1969-70 ninth grade students.

The second comparison group included eighth grade students who participated in the experimental program during both the fall and spring of 1968-69 and who returned to Concho during the fall of 1969-70. Table XI indicates a comparison of the Self-Concept mean scores and computed t values for the 1968-69 experimental eighth grade students and the 1969-70 experimental ninth grade students. The mean score for total positive tended to increase while the self-criticism mean tended to decline during the experimental program. There was a failure to reject the null hypothesis at the .05 level of confidence. The students overall self-concept improved, but their self-criticism mean score indicated that the students became more critical of themselves. The experimental program did not produce statistically favorable results.

Hypothesis 11: There is no significant difference at the .05 level of confidence in the Self-Concept mean scores for the 1969-70 eighth grade students as compared with the new eighth grade students who attended the Concho School in 1969-70.

The 1969-70 eighth grade students participated in the experimental program during both the fall and spring of 1968-69 and returned to Concho during the fall of 1969-70. These students were compared to a control group of eighth grade students who had not attended Concho during either the fall or spring of 1968-69. Table XII indicates a comparison of the Self-Concept mean scores and computed t values for the 1969-70 experimental eighth grade students as compared to the new (control) eighth grade students who attended Concho in 1969-70. Both

TABLE XI

A COMPARISON OF THE SELF-CONCEPT SCORES FOR THE FALL 1968-69 EIGHTH GRADE STUDENTS AND THE FALL 1969-70 NINTH GRADE STUDENTS

Fall Experimental	Number	Standard Deviation	Mean Score	t
Total Positive				
1968-69	16	23.46	300.75	
				1.56
1969-70	18	31.51	315.78	
Self-Criticism				
1968-69	16	4.70	32.44	
				0.84
1969-70	18	4.16	31.17	

*Significant beyond the .05 level

TABLE XII

A COMPARISON OF THE SELF-CONCEPT SCORES FOR THE 1969-70 FALL EXPERIMENTAL AND FALL CONTROL EIGHTH GRADE STUDENTS

1969-70 Eighth Grade	Number	Standard Deviation	Mean Score	t
Total Positive				
Experimental	10	27.61	287.80	
				0.97
Control	13	10.66	296.77	
Self-Criticism				
Experimental	10	3.99	31.80	
				1.05
Control	13	7.01	34.23	

*Significant beyond the .05 level

the total positive and self-criticism mean scores were higher for the control group (new students) than for the experimental group (1969-70 experimental eighth grade students). However, there was a failure to reject the null hypothesis at the .05 level of confidence. The control group generally appeared to have a higher self-concept than the experimental students. The control student's previous environment tended to create a greater self-concept level. The experimental program did not seem to make a significant contribution to improved self-concept levels of the experimental students.

Hypothesis 12: There is no significant difference at the .05 level of confidence in the Self-Concept mean scores of the 1969-70 ninth grade students as compared with the new ninth grade students who attended in 1969-70.

The 1969-70 ninth grade students participated in the experimental program during both the fall and spring of 1968-69 and returned to Concho during the fall of 1969-70. These students were compared to a control group of ninth grade students who had not attended Concho during either the fall or spring of 1968-69. Table XIII indicated a comparison of the Self-Concept mean scores and computed t values for the 1969-70 experimental ninth grade students as compared with the new (control) ninth grade students who attended Concho in 1969-70. The mean score for total positive was higher for the experimental group; however, the control group had a higher self-criticism mean than the experimental group. The control group's overall self-concept was below the experimental group; however, the control group appeared to be more critical of themselves. There was a failure to reject the null hypothesis at the .05 level of confidence. Again the experimental

program did not appear to make a significant contribution to improved self-concept levels.

TABLE XIII

A COMPARISON OF THE SELF-CONCEPT SCORES FOR THE 1969-70 FALL EXPERIMENTAL AND FALL CONTROL NINTH GRADE STUDENTS

1969-70 Ninth Grade	Number	Standard Deviation	Mean Score	t
Total Positive				
Experimental	18	31.51	315.78	0.39
Control	4	23.77	309.25	
Self-Criticism				
Experimental	18	4.16	31.17	0.53
Control	4	6.14	32.50	

*Significant beyond the .05 level

Hypothesis 13: There is no significant difference at the .05 level of confidence in the Self-Concept mean scores of the 1968-69 seventh grade students who returned home for the summer and then returned to Concho School in the fall of 1969 as compared to those seventh grade students who spent the summer at the Concho School and returned to the classroom at Concho in the fall of 1969.

The comparison group included seventh grade students who participated in the experimental program during both the fall and spring of 1968-69 and who returned to Concho during the fall of 1969-70. Table

XIV indicates a comparison of the Self-Concept mean scores and computed t values for the 1968-69 seventh grade students who attended Concho during the summer of 1969. The mean score for total positive was higher for those who attended Concho during the summer; however, the self-criticism mean score was lower for those who attended Concho in the summer of 1969 than for those who did not attend. The overall self-concept improved for the students who attended Concho during the summer of 1969. There was a failure to reject the null hypothesis at the .05 level of confidence. The results may be untenable because of the lack of statistical significance and the small number of students who attended Concho during the summer of 1969.

TABLE XIV

A COMPARISON OF THE SELF-CONCEPT SCORES FOR THE 1968-69 SEVENTH GRADE STUDENTS WHO ATTENDED CONCHO DURING THE SUMMER OF 1969 AND THOSE NOT ATTENDING

Fall, 1969 Eighth Grade	Number	Standard Deviation	Mean Score	t
Total Positive				
Not at Concho	9	27.98	285.22	1.67
Attended Concho	2	12.73	320.00	
Self-Criticism				
Not at Concho	9	4.07	31.44	0.48
Attended Concho	2	9.90	28.00	

*Significant beyond the .05 level

Hypothesis 14: There is no significant difference at the .05 level of confidence in the Self-Concept mean scores of the 1968-69 eighth grade students who returned home for the summer and then returned to Concho School in the fall of 1969 as compared to those eighth grade students who spent the summer at the Concho School and returned to the classroom at Concho in the fall of 1969.

The comparison group included eighth grade students who participated in the experimental program during both the fall and spring of 1968-69 and who returned to Concho during the fall of 1969-70. Table XV indicates a comparison of the Self-Concept mean scores and computed t values for the 1968-69 eighth grade students who attended Concho during the summer of 1969 and those who did not attend Concho during the summer of 1969. The total positive mean scores were higher for those students who did not attend Concho during the summer while the self-criticism mean score was higher for those who attended Concho during the summer of 1969. As shown by Table XV, the self-criticism mean score was found to be statistically significant at the .05 level of confidence. Those who attended Concho during the summer had significantly greater self-criticism scores. Again the results may be untenable because of the lack of statistical significance for total positive scores and because of the small number of students who attended Concho during the summer of 1969.

Hypothesis 15: There is no significant difference at the .05 level of confidence between the 1968-69 experimental seventh grade students and the national norms when compared on the basis of the Tennessee Self-Concept Test.

TABLE XV

A COMPARISON OF THE SELF-CONCEPT SCORES FOR THE 1968-69 EIGHTH GRADE STUDENTS WHO ATTENDED CONCHO DURING THE SUMMER OF 1969 AND THOSE NOT ATTENDING

Fall, 1969-70 Ninth Grade	Number	Standard Deviation	Mean Score	t
Total Positive				
Not at Concho	16	32.30	318.69	1.42
Attended Concho	4	22.23	294.25	
Self-Criticism				
Not at Concho	16	3.74	30.56	2.37*
Attended Concho	4	3.70	35.50	

*Significant at the .05 level

The experimental group included seventh grade students who participated in the experimental program during both the fall and spring of 1968-69. Table XVI indicates a comparison of the Self-Concept mean scores and computed t values for the 1968-69 experimental seventh grade students and the national norms. The national norms mean scores for total positive and self-criticism were higher than either Self-Concept mean for the experimental seventh grade students. As shown by Table XVI, the total positive mean scores were statistically significant at the .001 level of confidence. The self-concept of the Indian student at Concho was considerably below the national norm. The total positive mean score was more than one standard deviation below the national norm. There was a failure to reject the null hypothesis at the .05 level of confidence for the self-criticism scores. The experimental program

appeared not to make a significant improvement in the self-concept of the Concho seventh grade students of 1968-69.

TABLE XVI

A COMPARISON OF THE SELF-CONCEPT SCORES FOR THE NATIONAL NORMS AND THE 1968-69 SPRING EXPERIMENTAL SEVENTH GRADE STUDENTS

1968-69 Seventh Grade	Number	Standard Deviation	Mean Score	t
Total Positive				
National Norm	626	30.70	345.57	7.57*
Experimental	18	30.47	290.39	
Self-Criticism				
National Norm	626	6.70	35.54	1.81
Experimental	18	5.33	33.22	

*Significant beyond the .001 level

Hypothesis 16: There is no significant difference at the .05 level of confidence between the 1968-69 experimental eighth grade students and the national norms when compared on the basis of the Tennessee Self-Concept Test.

The experimental group included eighth grade students who participated in the experimental program during both the fall and spring of 1968-69. Table XVII indicates a comparison of the Self-Concept mean scores and computed t values for the 1968-69 experimental eighth grade students and the national norms. The national norm mean score for the

total positive and self-criticism mean scores was higher than either Self-Concept means for the experimental eighth grade students. As shown by Table XVII, the total positive mean scores were statistically significant at the .001 level of confidence, and the self-criticism mean scores were statistically significant at the .01 level of confidence. The experimental program appeared not to make a significant improvement in the self-concept of the Concho eighth grade students of 1968-69.

TABLE XVII

A COMPARISON OF THE SELF-CONCEPT SCORES FOR THE NATIONAL NORMS AND THE 1968-69 SPRING EXPERIMENTAL EIGHTH GRADE STUDENTS

1968-69 Eighth Grade	Number	Standard Deviation	Mean Score	t
Total Positive				
National Norm	626	30.70	345.57	7.23**
Experimental	39	34.19	305.00	
Self-Criticism				
National Norm	626	6.70	35.54	3.00*
Experimental	39	5.35	32.85	

*Significant beyond the .01 level

**Significant beyond the .001 level

CHAPTER V

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

The purpose of this chapter is to present the summarized findings of the research and to present recommendations based upon these findings. The purpose of this study was to determine whether the seventh and eighth grade students who attended the Concho School from 1968-70 changed their achievement level or their self-concept as a result of the influence of the experimental program as measured by the SRA Achievement Series and the Tennessee Self-Concept Scale.

The analysis of data for the seventh and eighth grade students was divided into four areas. These were (1) comparison of the 1968-69 experimental students and the 1969-70 experimental students, (2) a comparison of the 1969-70 experimental students and the 1969-70 control students, (3) a comparison of the experimental students who remained at Concho during the summer of 1969 and those who were not at Concho during the summer of 1969, and (4) a comparison of the 1968-69 students and the national norms. All comparison groups were compared on the basis of mean scores for the SRA Achievement Series and the Tennessee Self-Concept Scale.

Summary

Results based upon an analysis of the data will be summarized for the SRA Achievement Series and the Tennessee Self-Concept Scale. Both

summarized comparisons of mean data and the statistical significance of the data have been presented below.

SRA Achievement Series. When a comparison was made of the 1968-69 seventh grade students with the 1969-70 eighth grade students, all mean SRA Achievement areas improved. However, total arithmetic and composite were the only two SRA Achievement areas in which statistically significant improved scores occurred. Further, total arithmetic was statistically significant at the .01 level of confidence. When comparing the 1968-69 eighth grade students with the 1969-70 ninth grade students, all mean SRA Achievement areas improved except the area of science, but the increases were not statistically significant.

When the 1969-70 eighth grade students were compared with the new (control) eighth grade students who attended Concho in 1969-70, all control mean SRA Achievement scores were greater except in the area of science; however, none of the mean SRA Achievement areas were found to be statistically different. When the 1969-70 ninth grade students were compared with the new (control) ninth grade students who attended Concho in 1969-70, all control mean SRA Achievement areas were greater. The SRA area of science was found to be statistically greater for the control group at the .05 level of confidence.

When the 1968-69 seventh grade students who returned home for the summer and then returned to Concho in the fall of 1969 were compared to the seventh grade students who spent the summer at the Concho School and returned to the classroom at Concho in the fall of 1969, all mean SRA Achievement areas for those who remained at Concho were found to be higher. However, these differences were not statistically significant at the .05 level of confidence. When comparing the eighth grade

students of the same groups as mentioned above, the mean SRA Achievement areas were greater for those who remained at Concho during the summer of 1969 except for social studies.

When comparing the 1968-69 seventh grade students and the eighth grade students with their respective national norms, the national norms were found to be significantly greater than the means of the Concho students. The national norms were found to be statistically significant at the .001 level of confidence. Further, most of the SRA Achievement means were below the national norms by more than one standard deviation.

The SRA Achievement means tended to improve for the experimental students between the 1968-69 and 1969-70 academic years. Some improvement was noted for those who remained at Concho during the summer of 1969 as compared to those who did not remain. Generally, however, these data were not statistically significant. When the experimental mean SRA Achievement areas were compared to the control group and the national norms, the mean SRA Achievement areas for the experimental students were found to be inferior. The experimental program appeared not to produce significant improvements in achievement as measured by the SRA Achievement Series.

Self-Concept. When the experimental 1968-69 students were compared to the experimental 1969-70 students, all the Self-Concept tests tended to decline except for the mean total positive scores of the 1969-70 ninth grade students. When the 1969-70 experimental eighth grade students and the experimental ninth grade students were compared to their respective control groups, the Self-Concept scores were greater for both control groups except for the mean total positive, which was somewhat greater for the 1969-70 experimental ninth grade students.

When the experimental seventh grade students who attended Concho during the summer of 1969 were compared to those who did not, the data revealed that the mean total positive score was greater for those who attended during the summer. Mean self-criticism scores were greater for those who did not attend during the summer of 1969. When comparing the eighth grade students of the same category as mentioned above, the exact opposite results were found.

The mean total positive score was found to be statistically significant at the .001 level of confidence when comparisons were made of the 1968-69 seventh and eighth grade students and the national norms. The self-criticism score was statistically significant at the .01 level of confidence when a comparison was made of the 1968-69 eighth grade students and the national norms.

Except for some slight improvement in the experimental students' total positive means, the experimental program appeared to have a negligible impact upon the experimental seventh grade students and the experimental eighth grade students.

Conclusions

In the SRA Achievement Series statistically significant changes occurred only in the areas of total arithmetic and composite scores for the 1969-70 eighth grade students. The fall control ninth grade students were statistically different only in the area of science. The national norms were statistically higher at all achievement levels. Generally the experimental program did not seem to make a statistically significant contribution to improved academic achievement.

In the Tennessee Self-Concept Test statistically significant

changes occurred in self-criticism only for the 1968-69 eighth grade students who attended Concho during the summer of 1969. The national norms were statistically different for the total positive and self-criticism scores. The experimental program appeared not to make significant improvement in the self-concept of the Concho students.

Recommendations

Inferences from this study to other Indian students should be limited to students with similar characteristics who attend Bureau of Indian Affairs Schools.

Future studies of Bureau of Indian Affairs Boarding Schools and Indian students should give consideration to additional study of the factors discussed below. Student motivation may be an important determinant of student academic achievement and self-concept levels. The design, administration, and educational innovations utilized in all experimental programs must be carefully controlled.

In the investigator's opinion, alternatives to the segregated Bureau of Indian Affairs Boarding School environment should be investigated as a possible avenue to improve students academic achievement and self-concept. Educational innovations should concentrate on basic subjects, such as reading, for longer periods of time. More emphasis and additional study may be necessary in the area of reading. Further, additional study of the curriculum may be necessary in Bureau of Indian Affairs Boarding Schools. Finally, the Indian student should be encouraged to spend at least part of his summer in an educational environment.

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APPENDIX A

Data Code

Column 1	1 - Sixth Grade 1968-69 2 - Sixth Grade 1969-70 3 - Seventh Grade 1968-69 4 - Seventh Grade 1969-70 5 - Eighth Grade 1968-69 6 - Eighth Grade 1969-70 7 - Ninth Grade 1968-69 8 - Ninth Grade 1969-70
Columns 2-3-4	Student Number 001 - 340
Column 5	1 - Fall Semester Pre-Test 2 - Spring Semester Post-Test
Columns 8-9	Total Arithmetic Score
Columns 15-16-17	Total Language Arts Score
Columns 23-24	Total Reading Score
Columns 30-31	Science Score
Columns 37-38	Social Studies Score
Columns 44-45-46	Composite Score
Columns 52-53-54	Total Positive Score
Columns 55-56	Self-Criticism Score
Column 60	0 - Control 1 - Experimental

APPENDIX B

TABLE XVIII

EDWARDS' TEST FOR HOMOGENEITY OF VARIANCE

Comparison Groups	df	F
Eighth Grade, Fall, 1969-70		
Experimental, Control		
SRA - Total Arithmetic	12,10	7.35*
SRA - Science	10,12	3.36*
Self-Concept - Total Positive	9,12	6.70*
Self-Concept - Self-Criticism	12, 9	3.08*
Ninth Grade, Fall, 1969-70		
Experimental, Control		
SRA - Total Reading	4,17	9.52*
SRA - Social Studies	4,17	2.87*
SRA - Composite	4,17	4.59*
Eighth Grade, Fall, 1969-70		
Attended Concho Summer 1969,		
Did Not Attend Concho Summer 1969		
SRA - Total Reading	9, 1	178.22*
Self-Concept - Self-Criticism	1, 9	5.93*
Seventh Grade, Spring, 1968-69		
National Norms, Experimental		
SRA - Total Arithmetic	1095,20	3.69*
SRA - Total Reading	1095,20	4.11*
SRA - Science	1095,20	2.01*
SRA - Social Studies	1095,20	8.28*
SRA - Composite	1095,20	3.38*
Eighth Grade, Spring, 1968-69		
National Norms, Experimental		
SRA - Total Arithmetic	1128,44	2.50*
SRA - Total Language Arts	1128,44	1.75*
SRA - Total Reading	1128,44	2.39*
SRA - Science	1128,44	2.23*
SRA - Social Studies	1128,44	2.28*
SRA - Composite	1128,44	2.74*
Self-Concept - Self-Criticism	625,38	1.57*

*Significant beyond the .05 level

VITA

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Candidate for the Degree of

Doctor of Education

Thesis: AN ANALYSIS OF ACHIEVEMENT AND SELF-CONCEPT SCORES OF THE SEVENTH AND EIGHTH GRADE STUDENTS AT THE CONCHO SCHOOL 1968-1970

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