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# A COMPARATIVE STUDY OF MARKS AND ATTITUDES IN PHYSICAL EDUCATION AND THE INVESTIGATION OF TEACHER TENURE UPON STUDENT ATTITUDES

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by

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ABSTRACT

SMITH, JACQUELYN KAY: A Comparative Study of Marks and Attitudes in Physical Education and the Investigation of Teacher Tenure Upon Student Attitudes ( M.S. 1973)

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Purpose: This study determined the relationship between student attitudes toward PE and marks and also investigated the effect of teacher tenure upon attitudes and marks.

Method of Research: In order to investigate the above, the Wear Attitude Inventory, Form B, was administered to 202 freshmen girls enrolled in a required PE course from a Class AA and a Class AAA SHS. Data was analyzed by means of the Pearson Product-Moment Correlations between attitude scores and final class marks. In order to investigate whether students with higher marks (A and B) had higher attitude scores than all combined students, analysis of variance was used. The t-test was used to determine differences between the attitude means of students receiving instruction under various teachers.

Results: Significant differences were found to exist between attitudes toward PE and final marks of students. Mean attitude scores were higher than mean grades. There was only a chance relationship between mean attitudes and mean grades under each of the five teachers. No

significant relationships were found between students receiving grades of A or B and their attitude scores. No significant relationships were found between length of service of a PE teacher and the attitudes of her students.

Conclusions: It was concluded that there are differences between attitudes toward PE and final marks received in a PE class. A high grade could not be predicted from a given attitude score. Length of service of a teacher made no difference in the attitudes of her students.

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# Chapter 1

## INTRODUCTION

A challenge of the woman physical education teacher is to motivate each student so that the student might acquire optimum skills and knowledges to help her better adjust in life (35). A determining factor in learning these skills and knowledges is attitude. More learning can occur with a student who has a positive rather than a negative attitude (11).

The Kansas Board of Education, in its attempt to establish criteria so that graduates of Kansas High Schools should be well-rounded individuals, state in their regulations that each student must earn "one unit of physical education which may include one-half unit of health, safety, first aid, or physiology" (39:13) as a prerequisite for graduation.

Frequently the requirement is met by taking a one-year course which alternates days of health study and physical activities. A one-half year or even one full school year is not enough time in which to teach the scope of activities in preparing a student for adult life. The limited time in various activities does not allow the average student to become very proficient in many activities. In addition to the limited time factor, Nemson (29) believed

students frequently resent compulsory participation in required physical education courses.

Our profession, as physical educators, must study attitudes toward physical education so that it can best equip students with skills, knowledges, and attitudes for their futures. "Education can no longer invest so much educational effort in job preparation when there is such a need for education in wise use of leisure time." (20:2) Studies have indicated that women prefer individual sports (4, 28, 33) over team sports. In some cases high schools offer a highly individualized sports program only as an advanced elective course after the basic requirement has been met. If negative attitudes result from the required course, then carry-over values will not be satisfactorily acquired.

## THE PROBLEM

This study investigated to what degree tenure of a teacher and final marks of a student contribute to either positive or negative attitudes toward physical education. On the surface it seemed those girls who are most cooperative and willing to work in a physical education class receive higher marks in the class. If positive attitudes and higher course marks are related, then the teacher should promote better attitudes of the student toward physical education. Carr (13) and Warren (37) feel that teachers should make themselves aware of their students'

attitudes and if undesirable attitudes hinder learning, then they should be corrected.

Continuity of service of teachers could influence student attitudes toward the physical education class and program. Therefore, this study dealt with an examination in a Class AAA school of students' final marks and their attitudes under instruction from two first year teachers, with two year's teaching experience who filled the positions of both previous first year teachers. The teacher in the Class AA school taught fifteen years in the same school. All teachers involved in this study remained in the same respective schools for the entirety of their teaching experience.

## Statement of the Problem

This study was undertaken to discover what relationship, if any, existed between attitude scores and final marks received in required physical education classes. Among the questions to be answered were:

Is there a significant difference in the relationship between attitudes toward physical education and final marks received by freshmen girls in two different schools?

Is there a significant difference in the relationship between continuity of service of a physical education teacher and the attitudes and marks of her physical education students under an experienced teacher who has remained in the same school for sixteen years, or under two teachers remaining in the same school for only two years, or

under two teachers during their first teaching experience?

Statement of the Hypothesis

1. There will be no significant relationship between attitudes toward physical education and final marks received by freshmen girls in two different schools.

2. There will be no significant relationship between students receiving grades of A and B and their attitude scores.

3. There will be no significant relationship between continuity of service of a physical education teacher and her physical education students' attitudes or marks.

Purpose of the Study

This study was conducted to determine if there were any significant relationships between attitudes and final marks of freshmen girls in two four year high schools. The two schools were in different state classifications, which were assigned according to the size of school enrollment by the Kansas State High School Activities Association.

Comparisons of the mean attitudes and mean grades of students of five teachers were made to find any significant differences that might have existed among students with teachers of varied tenure. The Class AAA school had a record over the past ten years of teachers remaining in that school for only one or two years, while the one teacher in the AA school classification remained for a period of years.

Significance of the Study

Education, to a large extent, is the development of proper attitudes. If the physical education course is to have more than a temporary effect upon the student, the development of a favorable attitude toward physical education is necessary (35). "All girls do not adjust to the school program of physical education with the same ease and speed." (13:176) To make sure that physical education classes are fulfilling the needs of the pupils, attitude scales are a valuable device in the evaluation of attitudes (16). Wear stated that

> Controlled experiments should be made concerning the effect upon attitudes of various types of programs, of various administrative measures and methods, and of various methods of instruction (37:123).

There are educators who feel that educational objectives should be changed (20). The trend today is to reduce the number of required courses to enable students to enroll in courses which they feel will best meet their needs. High schools, as well as colleges, have already felt the result of having requirements dropped or reduced. Therefore, it is essential that physical educators research the problem of attitude toward physical education so students under their own volition will take those courses which will equip them for emotional, social, intellectual and physical well being.

## DEFINITION OF TERMS

Words and certain terms used in this study have been

defined to clarify their meaning in order to avoid confusion and misunderstanding.

Attitude

Attitude is defined by Good (19) as a state of mental and emotional readiness to react to situations, persons, or things in a manner in harmony with habitual pattern or responses previously conditioned to or associated with these stimuli.

Attitude Scale

An instrument to measure feelings concerning a specific subject (19).

Mark

A rating of achievement assigned on the basis of some scale, for the purpose of this study the A, B, C, D, and F scale (19). The terms grade and mark will be used interchangeably throughout this study. Marks used in statistical procedures will be converted into a point system with A equal to four points.

Physical Education

That integral part of total education which contributes to the development of the individual through the natural medium of physical activity--human development. It is a carefully planned sequence of learning experiences designed to fulfill the growth, development, and behavioral needs of each student (23).

Tenure

The length of a teacher's service in a single position or school system (19). Tenure, continuity of service, and teaching experience will be used interchangeably throughout this paper.

## LIMITATIONS OF THE STUDY

There are some factors which might have limited the effectiveness of this study. Subjects were limited to freshmen girls enrolled in physical education classes, although sophomore, junior, and senior female physical education students also answered the questionnaire.

It was hoped the personality of the teachers would be of little difference. However, Billing (5) found in her study of attitudes of college students, a significant difference in the mean scores of women students under various instructors. Personality and tenure could be confused in the comparison of teachers.

## DELIMITATIONS OF THE STUDY

The course of study for the two schools was similar, but not identical. Both schools offered a program containing individual and team sports and the opportunity for inter-school competition for girls. All students involved in this study had participated in physical education classes in a junior high school program.

Attitudes of all freshmen students might have been

affected by being in a required rather than an elective course.

## Chapter 2

## REVIEW OF LITERATURE

Much research has been done regarding attitudes and their relationships with numerous qualities, while only three studies were directly related to the present study comparing attitude with grades. The following reviewed studies were divided into sections according to attitude inventories used for attitude evaluation and various qualities which were compared with attitude.

### Development of the Wear Attitude Inventory

Carlos L. Wear (36), in an attempt to develop an instrument which would measure the intensity of individual and group feelings toward the physical education activity class, developed the Short Form of his inventory in 1951. This Inventory contained forty items which were multiple-choice items for a five point response scale.

In addition to researching items from books and articles for his inventory, he asked graduate and undergraduate students to suggest verbal expressions of their feelings toward the values of physical education. This resulted in a list of 289 items, which was edited to 120 items and later reduced to the forty items called the Short Form.

In compiling the Short Form, those items which had

the indicies of discrimination above the median were selected.

Statistics proved the reliability to be 0.94 by the split-halves techniques, which was raised to 0.97 by the Spearman-Brown Formula. Although male college subjects were used for testing, it was felt the Inventory would be equally suited for women and high school students. Studies have used the Wear Attitude Inventory using as subjects both sexes and a range in ages from junior high school through college.

Wear (36) stated that since life is filled with the changing of attitudes that instruments should be developed to examine specific types of activities. He also felt more experiments should be conducted concerning attitudes toward various types of programs and of various administrative measures and methods.

In 1955, Wear (37) developed two equivalent forms of a physical education attitude scale. The purpose of having two forms would enable the measurement of change in attitude after having a brief or extended physical education experience.

Statements making up the equivalent forms, hereafter referred to as Form A and Form B, were taken from the original 120 statements of the previous study. Statements were classified into four category arrangements being "physiological-physical", "mental-emotional", "social", and "general". Form A contained thirty items; however, Form B

had only twenty-nine items published. Each response was scored from five to one with very favorable receiving five points and very unfavorable receiving one point. The mean of the scores on Form A was 114.59, with SD of 17.24 and reliability of 0.94. The Form B mean was 114.45, with SD of 17.67 and reliability of 0.96.

Studies Comparing Attitudes and Grades

Directly related to this study was the study by Carr (13) in 1945 which dealt with the relationship between success in physical education and selected attitudes of high school freshmen girls. Carr promoted giving an inventory and making an evaluation early in the year so that some difficulties could be alleviated thus resulting in better learning.

Final physical education course marks were used as the first criterion of measurement for success. Success was also measured in a series of athletic events chosen from the Neilson and Cozens Achievement Scales. Intelligence quotients were obtained for each student and used for one basis for comparison.

After final marks were obtained, students were divided into two comparative groups. Students receiving A or B were classified as the "successful group". Scores on the battery of physical tests were obtained in September and May. A comparison was made between the successful and unsuccessful groups. This study concluded that motor ability, attitudes held, and I.Q. of a student in that order

contribute to success in a physical education class.

Vincent's (33) first study was directly related to the present study. The Wear Attitude Inventory was used to measure attitudes of 188 freshmen and sophomore college women. The success factor in the physical education class was determined by the final mark received in the physical education class. The subjects were enrolled in eight different sports and evaluations by the instructors were made from similar objective standards.

Attitude scores were analyzed in the four categories. The gymnastic students and tennis students had the best attitudes, while students enrolled in swimming and bowling had the least favorable attitudes. The mean success factor was highest in bowling.

It was stated that the activity in which the student was enrolled influenced attitudes. There was a significant relationship between attitudes and success, with the more favorable attitudes having higher significance. No reasons were given for cause and effect.

Vincent (34) conducted another study for examining to what degree attitude, strength, and efficiency played in the prediction of success in a physical education activity course. The Wear Attitude Inventory was administered to 192 students in the spring. From these thirty-seven students who represented a large range of scores were chosen as subjects for the remaining tests. At individual testing sessions, each student was tested for strength and efficiency. Final

grades were used as the success factor. Attitude measurement was of greater significance than strength and efficiency in the prediction of success in the physical education course. The testing for efficiency led to a negative relationship.

Studies Comparing Grades With Other Factors

A study of women comparing grip strength and final marks was conducted by Wessel and Nelson (38). Results were compared with data from a study by Tinkle and Montoye on men.

Grip strength was significantly related to achievement as measured by final class marks. Although there was a relationship of grip strength and higher final marks for both men and women, there was no proof that increasing strength would result in higher grades. This study supported results of the study by Tinkle and Montoye.

In comparing final grade classifications, the only significant difference was between students earning final marks of B and C. When height and weight were added to grip strength of college women all correlation coefficients were statistically significant.

In the study of Servis and Frost (31) their purpose was to determine what qualities were related to successful candidates enrolled in teacher education of the women's physical education department. Sixty-nine major women who had met requirements for the teacher education program were used as subjects for this study. The five testing instruments used in gathering data were: Thurstone temperament schedule, Allport-Vernon-Lindzy study of values, Otis quick scoring

mental ability test, Scott motor ability test, and Rogers physical fitness index battery. The success Factor was not only indicated by the letter grade of each student, but also a faculty rating and a peer rating. The best predictors of success in the professional program were the physical fitness index, the active temperament trait score, and the mental ability score.

Studies Contrasting Instructor Differences

Oral interviews were used by Nemson (29), along with a questionnaire which dealt with annoyances toward physical education and its program. A ten point scale was used for responses, with "not annoying at all" receiving one point and "annoys me very much" receiving ten points.

Nemson's questionnaire of 121 items was given to 323 junior and senior high school boys attending a semi-rural high school. The four instructors who taught the physical education classes rated their respective students.

This was the first study reviewed in which the teachers were treated individually. An interview was held with each instructor. Questions were asked concerning cleanliness, attitude, basis of rating students, personal annoyances and to what degree were these annoyances exhibited to the students. Subjects of only two of the four teachers were compared. These two teachers were the same age, trained in the same university and both were in their first year of teaching. Both instructors eliminated from the study were older and had received their education at other colleges.

Good attitude students were compared with bad attitude students. Smoking, swearing, tardiness, and working under crowded conditions were annoying to the good group. The poor group was annoyed with the fact they had to take gym, take a shower, or obey the instructor when they did not want to. This group seemed to rebel against compulsory physical education. Few annoyances had to do with the physical education facility, most were due to personality interactions between students and instructors.

Studies Using Wear Inventory as an Instrument

Ecker (16) conducted a study to evaluate the attitudes of sophomore and junior high school girls toward physical education. It was hypothesized that the junior girls would have higher attitude scores toward physical education because of a wider variety of activities available to them and a more individualized program. The Wear Attitude Inventory, Form A, was administered during the first fall class meeting to 282 junior girls and 395 sophomore girls. No significant difference was found between the sophomore and junior classes, although sophomore girls had slightly higher attitude scores.

Warren (35) used both forms of the Wear Attitude Inventory in order to measure attitudes at the beginning of the year and again at the end of the year. During the winter one group of students received individualized counseling by the teacher. Another group received no special attention. The group receiving special attention had higher mean scores

than did the other group in the second testing.

Broer (8) conducted a study using as one of her measurement tools, the Wear Inventory. Her purpose was to predict whether students of low motor ability would benefit from a basic skills course before entering the regular physical education program.

In studying students of low motor ability, it was found they lacked interest in physical activities. This was largely due to lack of instruction and experience in these activities. A basic physical education class which dealt with body movement and applying these movements in physical activities in which most students could experience success was established. The experimental group took this class before going into the regular physical education program. The control group was matched with the experimental group in motor ability, attitude, and A.C.E. (American Council on Education) test scores.

It was found that students not having the basic physical education class were less able to compete in both skills and knowledges with the control group. Instructor differences had little effect upon results of either group. General motor ability of the control students was improved due to the instruction in the basic physical education course.

Broer (7) collaborated on another study in which 1,149 college women were administered the Wear Inventory. The purpose of this study was to determine the attitudes of the freshmen and sophomore women at the University of

Washington. Thirty-six per cent were completely positive in their attitude toward physical education as an activity class, fifty-two per cent were undecided to negatively positive, and only twelve per cent were undecided to negative.

Mean attitude scores of students enrolled in various activities and classes taught by various instructors were compared. Mean attitude scores were higher in swimming and tennis than other activities. Badminton and archery had the lowest means. Students taught by different instructors had little difference in their mean scores. However, one instructor had significantly higher mean attitudes in her classes. She taught only swimming and tennis, so it may have been the activities enrolled in rather than instructor influence. However, this would contradict the results in Vincent's study (34) where swimming was next to the lowest activity for negative attitudes.

Keogh (24) used the Wear Inventory to determine if students differed in their attitudes toward general benefits or values of physical education and if there were a marked difference between stated attitudes of men and women. The attitude scores of the men were slightly higher than those of the women. However, there was no significant difference indicated between men and women in the percentage of agreement for each statement.

The relationship between strength and attitudes was the purpose of a study done by Wessel and Nelson (39). The

Wear Inventory was administered to 200 non-major college women. In addition to the attitude inventory, subjects were administered the hand grip, back lift, push, and pull strength measures. Five questions used by Wear and a nine point graphic rating scale concerning a subject's general attitude toward physical education was used to classify all subjects in the high or low group. Reliability was established by administering both forms of the Wear Inventory.

Back strength had closer relationship to attitude than the other strength measures. Grip strength was significantly related to those students who had positive attitudes. Strength was the one characteristic which contributed to performance in physical activities, therefore, lack of strength could be responsible for negative attitudes resulting from various failures in physical activity.

Brumbach and Cross (9) measured the attitudes toward physical education of all lower division students at the University of Oregon by using the Wear Inventory, Form A. At the first part of this longitudinal study, it was the purpose to determine how favorable the attitudes toward physical education were of students entering the University.

High schools in the region were accomplishing satisfactory goals as was indicated by above average means for two-thirds of its students. In the conclusion of the study it was found that athletes had better attitudes than non-athletes. Also, the more years a student had participated in high school physical education classes, the better the

attitude was likely to be. Students of smaller high schools with enrollment under 300 had better attitudes than students in larger schools.

The Wear Inventory was used in the 1968 study by Campbell (10). Subjects were classified according to the size of high school, academic interest, and preference of physical activities. In order for Campbell to determine structure of attitude toward physical education consideration was given to social, mental-emotional, physiological and general feelings of each subject. The conclusion was, no significant variation in attitude concerning physical education could be predicted from the size of a students' high school, the area of academic interest, or the preference of physical activity.

Much research has been done using college students, but little attention has been given to physical education in the public school. Campbell (11) used as subjects, junior high school boys. Form A of the Wear Attitude Inventory was administered to one seventh, eighth, and ninth grade class randomly from five schools.

In addition to scoring the response sheets an item analysis of the sub-divisional areas of the inventories was made. Teacher influence and environmental factors had little effect, if any, upon responses. The inventory was found to be suitable for use with the junior high school pupils.

Campbell (12) used junior high school boys as subjects for his next study which researched the possibility

of relationship between selected physical fitness scores and attitude. Form A of the Wear Inventory and two AAHPER Fitness items: the fifty yard dash and 600 yard run walk, were selected to test for physical fitness.

In comparing attitudes in this study with his previous study there was a significant deviation. This was largely due to the extreme scores from one school which contained deprived students. No relationship was found to exist between ability to perform on a physical fitness test and attitude scores. Comparisons made of the two physical fitness scores showed a high positive correlation.

Researchers developing attitude inventories other than Wear include: Drinkwater's (25) to determine attitudes toward entering the field of physical education as a career; Adams (1) of scoring; Edginton (17) developed an inventory in hope of surpassing reliability and validity of the other attitude inventories; and Kappes (22) inventory determined attitudes toward physical education.

Attitudes Toward the Physical Education Class

Data was secured from college non-major women by Alden (2) in the form of a questionnaire to find reasons for undesirable attitudes toward required physical education. Twenty-five items were listed as drawbacks. Students assigned importance to each item. "Inconvenience of dressing and undressing", with seventy-nine per cent, was the most frequent reason checked for undesirable attitude. Second, with seventy-two per cent, was "not enough time for

dressing". The study covered so few schools that it seemed advisable to state results in terms of questions raised, rather than conclusions reached.

Bullock and Allen (6) conducted a study to determine student attitudes and to discover what conditions had influenced formation of these attitudes. The questionnaire given to 192 college freshmen women covered home life, early play experiences, high school experiences, and college experiences. Some factors influencing negative attitudes were: 1) lack of opportunity to play with other children in childhood, 2) training of their former physical education teacher, and 3) no opportunity to select activities of their choice due to schedule. The dislike was not as great as the authors had assumed.

Another study by Anderson (3) dealt with attitudes of three groups of high school girls. The groups were classified as superior, average, and inferior based upon abilities, interests, and achievement. McCloy's Motor Ability Tests were given to secure ability scores, regular achievement tests were used, and evidence of outside interest was determined and used as a basis for selecting the three control groups. The study revealed that the most popular physical activities had many carry-over values. There was no clear relation between skill and interest. In three groups combined, seventy-five per cent reported they enjoyed playing a game that they played well.

Researching the attitudes held by college women and

finding to what extent they were using recreational programs available to them was the problem studied by Moore (28). The Bues-Remmers' Scale was administered to subjects and individual interviews were held to measure attitudes. The results from this study indicated that "damage done to appearance by activity, showering and dressing, nor lack of skill" were of any particular importance in contributing to lack of intramural participation. Student responses indicated that physical activity had a definite place in their lives, but their time was extremely limited. individual sports activities and dancing were rated higher for interest and participation than were team sports.

Flanagan (18) studied personality traits of individuals in specific physical activity groups. In studying the differences of fencers from other activity participants, he found that fencers were more ascendant than basketball players. Volleyball players were more emotionally unstable than basketball players. Items taken from four tests to measure ascendance-submission, masculinity-feminity, introversion-extroversion, and emotional stability-emotional instability were conclusive in evidence that the curriculum should include activities in which every individual's needs would be provided.

A study of women's attitudes by Bell and Walters (4) was done to help evaluate their program. Freshmen in required physical education courses were studied. The results of the questionnaire revealed several things. Students who had

high school physical education classes enjoyed the college classes a lot more and had a higher mean attitude. individual sports were the activities, outside the physical education class, most frequently engaged in by both freshmen and seniors. Freshmen believed the physical education department was meeting the needs better than did the senior students. The main reasons given for not spending more time in activity were studying, extra-curricular activities, and work.

Effect of Athletics Upon Attitudes

A revised Plummer Attitude Inventory consisting of thirty items was used by Mista (27) to examine what background characteristics contributed toward physical education attitudes. Freshmen college women from fourteen private Iowa colleges were used as subjects. A background questionnaire as well as the inventory was filled out by 1,126 subjects.

Fourteen categories were used with two groups compared in each. Girls who earned high school varsity letters had more favorable attitudes than those who did not, also those who participated in an extra-school physical activity had better attitudes. Girls had higher attitudes who lived on farms, were from small high schools, chose a teaching career, were above average in physical skill and who enjoyed their high school physical education program.

The relationship between athletic achievement and personality adjustment was the purpose of a study done by

Sperling (32). The personality profile on all subjects consisted of a battery of questionnaires. Subjects were divided into three groups. The varsity athlete group consisted of 171 subjects, the intramural group had 138, and 126 subjects were classified as non-athletes. The non-athlete group was more liberal, aesthetically motivated, and theoretical than the other groups. The non-athletes also had significantly lower personality adjustment scores, while the varsity and intramural groups scored higher on the personality adjustment inventory. The athletes participating in varsity sports scored higher in extroversion and ascendance. In comparing varsity teams, basketball players manifested higher self-confidence and higher social motivational interest. The football team demonstrated its only significant divergence by a low liberalism score. The wrestling group showed smaller differences in the traits than any other group.

## SUMMARY

Most authorities agree that good attitude is an essential ingredient in providing an atmosphere for optimum learning. Many studies have been done comparing the relationship of attitude with various qualities, trying to identify what causes some individuals to have good attitudes and others to have negative attitudes. Studies in this chapter have indicated many things which affect attitudes. Among reasons for the development of positive or negative attitudes pres-

ented were background, classroom activities, facilities, and interactions between the student and the teacher.

Ideally, every teacher should motivate each pupil so that the student desires to perform well in the specific subject area. The attitude of a student should be investigated for the purpose of promoting positive attitudes toward physical activity.

## Chapter 3

## METHODS AND PROCEDURES

The purpose of this study was to determine the relationship, if any, between attitudes and final marks received by students in a physical education class. A second major purpose was to compare the students of the teachers involved to determine if teaching experience affected student attitudes. Form B of the Wear Attitude Inventory was used to obtain attitude scores.

### POPULATION AND SAMPLING

Attitude scores were obtained from all students in required and elective physical education courses from two high schools, however, only freshmen girls enrolled in a required class were selected for this "ex post facto" experiment. Subjects came from a Class AA school and a Class AAA school which were located in relatively small Kansas towns. Much of the school population consists of students living in rural areas.

The number of subjects from both schools totaled 202. One-hundred thirty-five freshmen response scores were obtained from the Class AAA school and sixty-seven scores were obtained from the Class AA school. Three subjects from the Class AAA school were eliminated due to faulty response sheets, while

only one was eliminated from the Class AA school. Attitude responses were obtained in the last two weeks of May, so that the scores were representative of students completing their freshmen required course, as well as other physical education experiences in their earlier lives.

Table 1

Administration of the Inventory According to School, Teacher, Tenure, Students and Year

| School Classification | Teacher | Tenure in Years | Number of Students | Year of Response |
|---|---|---|---|---|
| AA | A | 15 | 30 | 1971 |
| AA | A | 16 | 37 | 1972 |
| AAA | B | 1 | 33 | 1970 |
| AAA | C | 1 | 36 | 1970 |
| AAA | D | 2 | 39 | 1972 |
| AAA | E | 2 | 27 | 1972 |

The instructors involved in this study were knowledgeable in the field of physical education. The curriculum in both schools was similar by having as a part of their program the team sports of basketball, soccer, softball, and volleyball; as well as individual sports of track, archery, badminton and gymnastics. The Class AA school included dance and flag football in its class curriculum and participated in inter-school track meets. The Class AAA school included bowling, tennis and table tennis in its class curric-

ulum, had intramurals, and participated in inter-school tennis competition.

Inventory responses and final marks were gathered from the AA school subjects in May of 1971 and May of 1972. Two years were used for collecting data in this school to allow a comparison of two different freshmen classes receiving instruction from the same instructor. Since this teacher used the same grading technique and similar curriculum in both years, a significant difference was not anticipated.

Attitude scores and grades were obtained from the Glass AAA school in May of 1970 and May of 1972. This allowed a comparison of data from subjects having two teachers with two year's teaching experience to be compared with subjects having two teachers in their first year of teaching.

## DATA COLLECTION

The Wear Attitude Inventory, Form B, was selected to secure attitude scores from subjects because of its adaptability and reliability. This inventory was reported to have thirty items. However, only twenty-nine items were printed in the Research Quarterly and the book by Cowell and Schwehn (14). In the review of literature, Form B was not used as frequently by researchers as was Form A. The Wear Inventory has been used successfully with both male and female subjects ranging in ages from junior high school to college students.

Form B was administered to the subjects by their regular physical education teacher. Instructor comments given to subjects were: "the inventory information was to be used in a thesis, names were to be written on the individual response sheets, and in no way would the subject's grade be affected by her responses". Subjects were to read their own test directions (See Appendix A, p. 50). Instructions indicated that students should rate their feelings ranging from strongly agree to strongly disagree toward each of the twenty-nine statements. On positively stated items, "strongly agree" received five points, four points were awarded for "agree", three points for "undecided", two points for "disagree", and one point for "strongly disagree". A reverse order of points was given for responses of negatively stated items.

Copies of the Wear Attitude Inventory and response sheets for each subject were given to teachers A, B, and C. The time required for all subjects to respond to the twenty-nine inventory items was approximately twenty-five minutes. Class response sheets were collected by respective physical education teachers A, B, and C, who forwarded them to the researcher via the researcher's husband. Inventory questionnaires were mailed to teacher D who returned by mail the response sheets from students taught by herself and teacher E.

## DATA ANALYSIS

The relationships between student attitudes and marks

and student attitudes and teacher tenure were investigated through this study. Attitude scores from 202 female freshmen students were obtained by 5 teachers through the administration of the Wear Attitude Inventory, Form B. At the end of the year, final marks for each subject were obtained from her teacher's permanent grade sheets.

After receiving the response sheets, they were individually rated by the researcher. The information was then programmed for the Monroe 1785 Computer located at Kansas State Teachers College.

In order to explore the relationship existing between attitudes of students toward physical education and their final marks received, the Pearson Product-Moment Coefficient of Correlation (r) was calculated. In order to investigate the assumption that students with A and B marks probably had higher attitude scores than students receiving C, D, or F analysis of variance was used. The existence of a significant difference between teachers of varied tenure and their students' attitudes and grades was examined by using the t-test.

# Chapter 4

## ANALYSIS OF DATA

The purpose of this study was to determine the relationship between attitudes and final marks of freshmen students under the instruction of five different teachers. Teacher tenure, student attitudes, and marks were compared for significance.

## RESPONSE ANALYSIS

The 202 subjects in this study were freshmen female students from two different schools, who were enrolled in a required physical education course. The Class AA school in its first inventory administration under Teacher A had thirty students respond. The following year a total of thirty-seven students of Teacher A responded. The Class AAA school, had Teacher B with thirty-three students, Teacher C with thirty-six, Teacher D with thirty-nine, and Teacher E with twenty-seven students.

## STATISTICAL ANALYSIS

The Pearson-Moment Coefficient of Correlation formula was calculated to find the degree of relationship between attitude scores obtained by means of the Wear Attitude Inventory and final marks received by freshmen girls. Anal-

ysis of variance was used to compare high marks with attitudes. The t-test was calculated between the means of two classes under teachers with the same amount of tenure to determine if any significant differences existed at the .05 level of significance.

## Correlations of Attitude Scores and Marks for the Six Freshmen Groups

In order to ascertain the relationships that might have existed between the six groups, as described in the Response Analysis Section, correlation (r) values were calculated and the t-test applied to determine if a significant difference did exist between the means of marks and attitude scores.

It was hypothesized that there would be no significant relationship between attitudes toward physical education and final marks received by freshmen students in two different senior high schools. Therefore, a correlation of the attitude scores and marks were calculated between two groups of subjects from the Class AA school and four groups of subjects from the Class AAA school.

Table 2

t-Table for the Attitude Measures and Final Marks of Freshmen Girls Having Teacher A in May 1971

| Characteristic | N | Mean | Sum of Squares | Standard Deviation | r | $r^2$ | t |
|---|---|---|---|---|---|---|---|
| Attitude | 30 | 110.76 | 6911.370 | 15.178 | .059 | .0034 | 39.024 |
| Grade | 30 | 2.8 | 12.798 | .6531 | | | |

For Teacher A in 1971 (Table 1), the mean attitude score of thirty students was 110.76 and the average (or mean) assigned grade was 2.8. These values, along with the respective standard deviations and the correlation values are shown in Table 2. A correlation of 0.059 ($r=0.059$) was found between the variables of attitude scores and marks. A general interpretation for this value would indicate there was only a chance or negligible relationship between attitudes and grades. The coefficient of determination ($r^2$) was 0.0034. This indicated that about 0.34% of the variance of the grade values were accounted for by the attitude scores.

In testing for a significant difference between the sample means of attitude and grades a $t$-value of 39.024 was found. Since a $t \geq 2.756$ was needed at the .01 level of significance, the null hypothesis would be rejected. Therefore, it was concluded that there was a significant difference between the means of attitudes and marks received by the student under Teacher A in 1971.

Table 3

$t$-Table for the Attitude Measures and Final Marks of Freshmen Girls Having Teacher A in May 1972

| Characteristic | N | Mean | Sum of Squares | Standard Deviation | r | $r^2$ | $t$ |
|---|---|---|---|---|---|---|---|
| Attitude | 37 | 113.21 | 8270.277 | 14.951 | .272 | .074 | 45.50 |
| Grade | 37 | 2.59 | 22.903 | .787 | | | |

For Teacher A in 1972 (Table 3), a correlation value of 0.272 (r=0.272) was found between the attitude and grade variables. Once again only a chance or negligible relationship was indicated. The coefficient of determination ($r^2$) of 0.074 means that 7.4% of the variance of the grade values were accounted for by attitude scores.

A $t$ of 45.50 was found after testing for a significant difference between the sample means. A $t$-value $\geq$2.750 was needed at the .01 level of significance, therefore, the null hypothesis was rejected. It was found that a significant difference did exist between the means of the attitude and grade of students under instruction of Teacher A in 1972.

Table 4

$t$-Table for the Attitude Measures and Final Marks of Freshmen Girls Having Teacher B in May 1970

| Characteristic | N | Mean | Sum of Squares | Standard Deviation | r | $r^2$ | $t$ |
|---|---|---|---|---|---|---|---|
| Attitude | 33 | 104.364 | 13699.620 | 20.375 | .193 | .0372 | 29.004 |
| Grade | 33 | 2.091 | 14.718 | .668 | | | |

Table 4, for Teacher B in 1970, indicated a correlation value of 0.193 (r=0.193) between the two variables. Only a chance or negligible relationship existed. The ($r^2$) or Coefficient of determination being 0.0372 indicated that about 3.7% of the variance of the grade values was accounted for by the attitude scores.

In testing for a significant difference between the means of attitude and grades, a $t$ of 29.004 was found between the two samples. A $t$-value of $\geq$2.750 was needed at the .01 level of significance. The null hypothesis was rejected and the conclusion made that there was a significant difference between the mean attitudes and mean grades of students under Teacher B in 1970.

In Table 5, comparing mean attitudes and grades of Teacher C, the correlation value of -0.172 (r=-0.172) was calculated between variables, indicating only a slight negative relationship. The coefficient of determination ($r^2$) was 0.0295 which means that about 2.95% of the variance of the attitude scores were accounted for by the mark values.

Table 5

$t$-Table for the Attitude Measures and Final Marks of Freshmen Girls Having Teacher C in May 1970

| Characteristic | N | Mean | Sum of Squares | Standard Deviation | r | $r^2$ | $t$ |
|---|---|---|---|---|---|---|---|
| Attitude | 37 | 112.333 | 8777.214 | 15.402 | -0.172 | 0.0295 | 42.457 |
| Grade | 37 | 2.417 | 17.205 | .682 | | | |

In testing for a significant difference between the sample means a $t$ of 42.457 was found. A $t$-value $\geq$2.750 was needed and therefore the null hypothesis was once again rejected because there was a significant difference between

the means of the two populations involved with Teacher C in 1970.

Table 6

*t*-Table for the Attitude Measures and Final Marks of Freshmen Girls Having Teacher D in May 1972

| Characteristic | N | Mean | Sum of Squares | Standard Deviation | r | $r^2$ | *t* |
|---|---|---|---|---|---|---|---|
| Attitude | 39 | 110.05 | 10417.914 | 16.344 | .329 | 0.108 | 41.504 |
| Grade | 39 | 2.82 | 17.745 | .625 | | | |

Table 6, featuring Teacher D, presented the highest positive correlation value of 0.108 (r=0.108). This indicated a slight relationship. The coefficient of determination ($r^2$) was 0.108 which meant almost 10.8% of the variance of the grade values was accounted for by attitude scores.

The significant difference between the sample means was tested and a *t*-value of 41.504 was found between attitudes and grades. At the .01 level of significance a *t*-value $\geq$2.750 was needed. The null hypothesis was rejected. There was a significant difference between the means of attitudes and grade of students under Teacher D in 1972.

A correlation value of -0.131 (r=-0.131) was found between the two variables, attitudes and grades, of Teacher E, (Table 7). The coefficient of determination ($r^2$) was 0.0171 which means that about 1.71% of the variance of the attitude

scores was accounted for by the mark value.

Table 7

t-Table for the Attitude Measures and Final Marks of Freshmen Girls Having Teacher E in May 1972

| Characteristic | N | Mean | Sum of Squares | Standard Deviation | r | $r^2$ | t |
|---|---|---|---|---|---|---|---|
| Attitude | 27 | 106.88 | 7402.671 | 16.558 | -0.131 | .0171 | 32.494 |
| Grade | 27 | 2.741 | 11.178 | .644 | | | |

A t-value of 32.494 was found when testing for a significant difference between sample means. A $t \geq 2.779$ was needed at the .01 level of significance, the null hypothesis was rejected. There was a significant difference between the means of the two populations.

Comparison of High Marks and Attitude Scores of Six Student Groups

In order to investigate the possibility of students receiving higher final marks, A or B, also having higher mean attitude scores than the total student group (See Appendix C, p. 53), analysis of variance was the statistical tool used. The null hypothesis stated there would be no significant difference between the means of the six student groups.

As shown in Table 8, the obtained F-ration of 0.976 when comparing high marks with attitude scores of all six groups was less than the tabled value of ($F_{5,112} \geq 2.37$) at the

.01 level of significance. Since the obtained F-value of 0.976 did not fall within the critical region the null hypothesis would be accepted. It was concluded that there was no significant difference between students receiving grades of A or B and their attitude scores.

Table 8

Analysis of Variance With Attitudes of Students With High Marks Under Various Instructors

| Source of Variation | Sum of Squares | Degrees of Freedom | Mean Square | F |
|---|---|---|---|---|
| Between | 1446.34 | 5 | 289.27 | 0.976 |
| Within | 3,3196.71 | 112 | 296.40 | |
| Total | 3,4643.05 | 117 | | |

## Comparison of Teacher Tenure With Student Attitudes and Marks

A third hypothesis of this study indicated the assumption there would be no significant relationship between continuity of service of a physical education teacher and her physical education students attitudes or marks. The existence of a significant difference between teachers of varied tenure and their students' attitudes and grades was examined by using the *t*-test.

First Year Teachers versus Experienced Teacher. There were sixty-seven students included in the "experienced teacher group" under Teacher A that yielded a mean value of

112.119 ($\bar{X}$=112.119), while 228.075 and 15.102 were the variance and standard deviation respectively. Of the sixty-nine students belonging to Teachers B and C, the "first year teacher group", a mean value of 108.522 ($\bar{X}$=108.522) was found. The variance for this second group was 338.163 and the standard deviation was 18.389.

The z-test, a normal sampling distribution, indicates what difference exists between the means of two classes. A z-value of +1.29 was obtained in testing to determine if there was a significant difference between the means of the two teacher tenure populations. Using the .05 level of significance to determine the region for a normal sampling distribution of the differences between the sample means, a z 1.96 was needed to reject the null hypothesis. Since the obtained value of +1.29 $\lesssim$(z=+1.29), did not fall in the critical region, the null hypothesis was maintained.

Experienced Teachers versus Second Year Teachers. Students for two different years under Teacher A, the experienced teacher, totaled sixty-seven. The mean attitude score was 112.119 ($\bar{X}$=112.119), while 228.075 and 15.02 were the variance and standard deviation respectively. Of the sixty-six students belonging to Teacher D and E, the two-year teachers, a mean value of 108.758 ($\bar{X}$=108.758) was found. The variance for this second group was 272.426 with a standard deviation of 16.505.

The z-value of +1.2155 was the calculation found in testing to see if there was a significant difference between

the means of these two populations. At the .05 level of significance a $z = \geq 1.96$ was needed to reject the null-hypothesis. The obtained value of +1.2155 ($z=+1.2155$) did not fall in the critical region. The null hypothesis was maintained.

First Year Teachers versus Second Year Teachers. There were sixty-nine students combined from the "first year teachers B and C", which yielded a mean attitude value of 108.522 ($\bar{X}=108.522$). The variance was 338.163 and the standard deviation was 18.389. The "second year teacher" Group D and E, contained sixty-six students, with a mean value of 108.758 ($\bar{X}=108.758$). The variance and standard deviation respectively were 272.426 and 16.505.

A z-value of -0.078 was calculated in testing to see if there was a significant difference between the means of the two populations of teacher groups. Using the .05 level of significance to determine the region for a normal sampling distribution of the differences between sample means, a $z \geq 1.96$ was needed to reject the null hypothesis. Since the obtained value of -0.078 ($z=-0.078$), did not fall in the critical region the null hypothesis was tenable. There was no significant difference between students with the teacher having one or two years of teaching experience.

Experienced Teacher versus Two Years in the Same School. To find a relationship between two populations of students under the instruction of the same teacher a $t$-test

was calculated.

Table 9

t-Table For Comparison of
Students of Experienced Teacher

| Year | N | Mean Attitude | Sum of Squares | SD | t |
|---|---|---|---|---|---|
| 1971 | 30 | 110.77 | 6911.367 | 15.178 | -0.652 |
| 1972 | 37 | 113.216 | 8270.270 | 14.951 | |

There were sixty-seven students included in the comparison of students in the experienced teacher group. The mean attitude score for 1971 was 110.77 with a standard deviation of 15.178. The thirty-seven subjects responding in 1972 had a mean attitude score of 113.216 and a standard deviation of 14.951. In testing for a significant difference between the attitude means a t of $\geq$2.756 was needed at the .01 level of significance. Therefore, the null hypothesis stating that a relationship would not exist between continuity of service of a teacher and her students attitudes or marks was rejected because -0.652 did not fall within the critical region. Mean grades for 1971 and 1972 were 2.8 and 2.59 respectively.

# Chapter 5

## FINDINGS, CONCLUSION, AND RECOMMENDATIONS

The general purposes of this study were to investigate the relationship between student attitudes and marks and also to investigate the affect of teacher tenure upon attitude and marks.

Wear's Attitude Inventory was administered to sixty-seven freshmen students from a Class AA high school and to 135 freshmen girls from a Class AAA high school. Marks were obtained from grade sheets at the end of the school year. Tenure of teachers was also examined for significant affect upon attitude scores and marks.

Data was analyzed by means of the Pearson Product-Moment Coefficient of Correlation between attitude scores and final class marks received. A second procedure, analysis of variance, was used to determine if students receiving high marks had significantly higher mean attitudes. The *t*-test and z-test were used to determine significant relationships between the means of attitude or marks of students under teachers with varying tenure.

## FINDINGS

The findings of this study were as follows:

1. There was a significant relationship found at the

.01 level between attitudes toward physical education and final marks received by freshmen girls in each of the six groups from two different schools.

2. No significant relationship at the .01 level was found between students receiving marks of A or B and their attitude scores in either the Class AA or Class AAA schools.

3. No significant relationship was found at the .05 level of significance between continuity of service of a physical education teacher and her physical education students' attitudes or marks.

## DISCUSSION

A significant difference at the .01 level was found to exist between attitudes toward physical education and final marks received by freshmen girls in two different high schools. A significant difference was also found to exist between attitudes toward physical education and final marks received by freshmen girls in the same school.

No significant relationships were found at the .01 level between students receiving marks of A or B and their attitudes toward physical education. Within the limits of this study it was indicated that a high grade of A or B could not be predicted from an attitude score.

There was no significant relationship at the .05 level between continuity of service of a physical education teacher and her physical education student's attitudes and marks. Therefore, once again within the limits of this

study it was indicated that all teachers despite length of service have an equal chance at success with their students having positive attitudes. In comparison of tenure with the mean attitude scores, the highest mean was found among students of the experienced teacher. This mean score was 1.24 points lower than the mean score found by Wear in his original study. However, this difference could have been due to having only twenty-nine items instead of thirty. A significant difference at the .01 level was not found between two freshmen classes of the same teacher in the Class AA school.

Students in the classes of first year teachers had slightly lower mean grades and mean attitude scores than the two-year and experienced teachers. Students of the second-year teachers had a slightly higher mean attitude score than students of the first-year teachers. The two-year teachers gave the highest mean grades, this might suggest that first year teachers are harder on their students in grading during their first year and mellow with some experience. The mean attitude score for the experienced teacher was the highest of the three teacher tenure groups. This might indicate a slight possibility that student attitude is higher under a teacher who has remained in the same school for several years. However, at the .05 level no significance was found.

## CONCLUSIONS

In order to answer the general purpose of the study,

it was concluded that, within the limits of this study, significant differences do exist between attitude scores and final marks received by freshmen girls in a physical education class.

More specifically, it was concluded that:

1. There were significant differences found between mean attitude scores and mean final grades received in each of the six groups of freshmen girls from both the Class AA and Class AAA high schools. Mean attitude scores were much higher than mean grades.

2. There were no significant relationships found in either school between students receiving high marks of A or B and their attitude scores.

3. There was no significant relationship between continuity of service of a physical education teacher and her physical education students' attitude scores or marks.

## RECOMMENDATIONS

As a result of this study, the following recommendations are made for further study:

1. A duplication of this study using other schools to see if a relationship of grades and attitudes might exist as was found by Vincent and Carr in the Review of Literature.

2. A duplication of this study on the college level to find if activity enrolled in would make any significant difference.

3. A study indicating what factors have nurtured

positive or negative attitudes in students.

4. Development of an inventory and a study comparing attitude of female students in team and individual sports participation.

5. Development of a questionnaire concerning grading and a study dealing with two types of grading, pass or fail and letter grades, with respect to attitudes toward physical education class and marks received.

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# APPENDIXES

## APPENDIX A. WEAR ATTITUDE INVENTORY

Directions -- Please Read Carefully: Below you will find some statements about physical education. We would like to know how you feel about each statement. You are asked to consider physical education only from the standpoint of its place as an activity course during a regular class period. No reference is intended in any statement to interscholastic or intramural athletics. People differ widely in the way they feel about each statement. There are no right or wrong answers.

You have been provided with a separate answer sheet for recording your reaction to each statement. Read each statement carefully, go to the answer sheet, and opposite the number of the statement place an "X" in the square which is under the word (or words) that best describe your feeling about the statement. After reading a statement you will know at once, in most cases, whether you agree or disagree with the statement. If you agree, then decide whether to place an "X" under "Agree" or "Strongly Agree". If you disagree, then decide whether to place the "X" under "Disagree" or "Strongly Disagree". In case you are undecided (or neutral) concerning your feeling about the statement, then place an "X" under "Undecided". Try to avoid placing an "X" under "Undecided" in very many instances.

Whenever possible, let your own personal experience determine your answer. Work rapidly, do not spend much time on any statement. This is not a test but simply a survey to determine how people feel about physical education. Your answers will in no way affect your grade in any course. In fact, we are not interested in connecting any person with any paper -- so please answer each statement as you actually feel about it. Be sure to answer every statement.

### ATTITUDE SCALE (FORM B)

1. Associations in physical education activities give people a better understanding of each other.

2. Engaging in vigorous physical activity gets one interested in practicing good health habits.

3. The time spent in getting ready for and engaging in a physical education class could be more profitably spent in other ways.

4. A person's body usually has all the strength it needs without participation in physical education activities.

5. Participation in physical education activities tends to make one a more socially desirable person.

6. Physical education in schools does not receive the emphasis that it should.

7. Physical education classes are poor in opportunities for worthwhile social experiences.

8. A person would be better off emotionally if he did not participate in physical education.

9. It is possible to make physical education a valuable subject by proper selection of activities.

10. Developing a physical skill brings mental relaxation and relief.

11. Physical education classes provide nothing which will be of value outside the class.

12. There should not be over two one-hour periods per week devoted to physical education in schools.

13. Belonging to a group, for which opportunity is provided in team activities, is a desirable experience for a person.

14. Physical education is an important subject in helping a person gain and maintain all-round good health.

15. No definite beneficial results come from participation in physical education activities.

16. Engaging in group physical education activities is desirable for proper personality development.

17. Physical education activities tend to upset a person emotionally.

18. For its contributions to mental and emotional well-being physical education should be included in the program of every school.

19. I would advise anyone who is physically able to take physical education.

20. As far as improving physical health is concerned a physical education class is a waste of time.

21. Participation in physical education class activities tends to develop a wholesome interest in the functioning of one's body.

22. Physical education classes give a person an opportunity to have a good time.

23. The final mastering of a certain movement or skill in a physical education class brings pleasurable feeling that one seldom experiences elsewhere.

24. Physical education contributes little toward the improvement of social behavior.

25. Physical education classes provide values which are useful in other parts of daily living.

26. Physical education should be required for all who are physically able to participate.

27. The time devoted to physical education in schools could be more profitably used in study.

28. The skills learned in a physical education class do not add anything of value to a person's life.

29. Physical education does more harm socially than good.

## APPENDIX B. WEAR ATTITUDE INVENTORY ANSWER SHEET

Name_____ Classification_____

| | Strongly Agree | Agree | Disagree | Strongly Disagree | Undecided |
|---|---|---|---|---|---|
| 1. | ( ) | ( ) | ( ) | ( ) | ( ) |
| 2. | ( ) | ( ) | ( ) | ( ) | ( ) |
| 3. | ( ) | ( ) | ( ) | ( ) | ( ) |
| 4. | ( ) | ( ) | ( ) | ( ) | ( ) |
| 5. | ( ) | ( ) | ( ) | ( ) | ( ) |
| 6. | ( ) | ( ) | ( ) | ( ) | ( ) |
| 7. | ( ) | ( ) | ( ) | ( ) | ( ) |
| 8. | ( ) | ( ) | ( ) | ( ) | ( ) |
| 9. | ( ) | ( ) | ( ) | ( ) | ( ) |
| 10. | ( ) | ( ) | ( ) | ( ) | ( ) |
| 11. | ( ) | ( ) | ( ) | ( ) | ( ) |
| 12. | ( ) | ( ) | ( ) | ( ) | ( ) |
| 13. | ( ) | ( ) | ( ) | ( ) | ( ) |
| 14. | ( ) | ( ) | ( ) | ( ) | ( ) |
| 15. | ( ) | ( ) | ( ) | ( ) | ( ) |
| 16. | ( ) | ( ) | ( ) | ( ) | ( ) |
| 17. | ( ) | ( ) | ( ) | ( ) | ( ) |
| 18. | ( ) | ( ) | ( ) | ( ) | ( ) |
| 19. | ( ) | ( ) | ( ) | ( ) | ( ) |
| 20. | ( ) | ( ) | ( ) | ( ) | ( ) |
| 21. | ( ) | ( ) | ( ) | ( ) | ( ) |
| 22. | ( ) | ( ) | ( ) | ( ) | ( ) |
| 23. | ( ) | ( ) | ( ) | ( ) | ( ) |
| 24. | ( ) | ( ) | ( ) | ( ) | ( ) |
| 25. | ( ) | ( ) | ( ) | ( ) | ( ) |
| 26. | ( ) | ( ) | ( ) | ( ) | ( ) |
| 27. | ( ) | ( ) | ( ) | ( ) | ( ) |
| 28. | ( ) | ( ) | ( ) | ( ) | ( ) |
| 29. | ( ) | ( ) | ( ) | ( ) | ( ) |

## APPENDIX C. MARKS OF STUDENTS

| Mark | TEACHERS | | | | | |
|---|---|---|---|---|---|---|
| | Experienced | | First Year | | Second Year | |
| | A-1971 | A-1972 | B-1970 | C-1970 | D-1972 | E-1972 |
| A | 3 | 4 | 0 | 1 | 4 | 2 |
| B | 19 | 17 | 9 | 16 | 26 | 17 |
| C | 7 | 13 | 18 | 16 | 7 | 7 |
| D | 1 | 3 | 6 | 3 | 2 | 1 |
| F | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Students | 30 | 37 | 33 | 36 | 39 | 27 |

APPENDIX D

ATTITUDE SCORES OF STUDENTS WITH A OR B MARKS

| SCORE | TEACHERS | | | | | |
|---|---|---|---|---|---|---|
| | Experienced | | First Year | | Second Year | |
| | A | A | B | C | D | E |
| 141 | | | | | 1 | |
| 138 | | 1 | | | | |
| 137 | 2 | 1 | | | | |
| 136 | | | | | 1 | |
| 134 | | 1 | | | | |
| 133 | | | | | 1 | |
| 132 | | 1 | 1 | | | |
| 131 | | | | 1 | | |
| 130 | | | | 1 | | |
| 129 | | | 1 | | 1 | |
| 128 | | | 1 | | 1 | |
| 127 | 1 | 1 | | | | |
| 125 | | | | 1 | | |
| 124 | | 2 | | 1 | | |
| 123 | | | | | | 1 |
| 122 | | | 1 | 1 | | 1 |
| 121 | 1 | 2 | | 1 | | |
| 120 | 1 | 1 | | 1 | 2 | 2 |
| 119 | | | | | 2 | |
| 118 | 1 | | 2 | | | 2 |
| 117 | | 1 | | | | |
| 116 | | 1 | | | 3 | |
| 115 | 1 | | | | 1 | 1 |
| 114 | 2 | 1 | | 1 | 2 | |
| 113 | | | | 2 | 1 | |
| 112 | | | | | 3 | |
| 111 | 2 | | | | | 2 |
| 110 | 1 | | | 1 | 1 | |
| 109 | | 1 | | 1 | | 1 |
| 108 | 1 | | | | 2 | 1 |
| 107 | | | | | 2 | |
| 106 | | 2 | | | 1 | 1 |
| 105 | 1 | 1 | 1 | | | 1 |
| 104 | 2 | | | | | |
| 103 | 1 | | | | 2 | |
| 102 | 1 | 1 | 1 | | 1 | |
| 101 | 2 | | | | | 2 |
| 96 | 1 | | | 1 | | |
| 95 | | 1 | | | | |
| 94 | | | | 1 | | |
| 92 | | | | | 1 | |
| 87 | | | | 1 | | |
| 86 | | 1 | | | | |
| 84 | | | | | | 1 |
| 80 | | | | | | 1 |
| 71 | | | | | | 1 |
| 70 | | | | 1 | | |
| 65 | | 1 | | | | |
| 59 | 1 | | 1 | | | |
| 58 | | | | | | 1 |
| Total No. of Students | 22 | 21 | 9 | 17 | 29 | 19 |

## APPENDIX E

## ATTITUDE SCORES OF STUDENTS WITH C OR D MARKS

| SCORE | TEACHERS | | | | | |
|---|---|---|---|---|---|---|
| | Experienced | | First Year | | Second Year | |
| | A | A | B | C | D | E |
| 138 | | 1 | | | | |
| 137 | 1 | | | | | |
| 132 | | | | 1 | | |
| 127 | 1 | | 1 | | | |
| 126 | | 2 | 1 | 2 | | 1 |
| 125 | | | 1 | 3 | | |
| 124 | | | | 1 | | |
| 123 | | | | | | 1 |
| 122 | | | | 1 | 1 | |
| 121 | | | 1 | | | |
| 119 | 1 | 1 | 2 | | | |
| 118 | | 1 | | | | |
| 117 | | | | 1 | | |
| 116 | | 1 | 1 | | 1 | 3 |
| 115 | | | 1 | 1 | | |
| 114 | | | 1 | | 1 | |
| 113 | | 1 | | 1 | | |
| 112 | 1 | | | 2 | | 1 |
| 111 | 1 | | | 1 | | |
| 110 | | | | 2 | | |
| 109 | | 1 | 1 | | | |
| 108 | | 2 | 1 | | 1 | |
| 107 | | 1 | | | | 1 |
| 106 | 2 | 1 | | | | |
| 104 | | | | 1 | | |
| 103 | | | 1 | 1 | 1 | |
| 101 | | | 1 | | 1 | |
| 100 | | 1 | | | | |
| 99 | | 1 | 1 | | | |
| 98 | | 2 | | | | |
| 96 | | | | 1 | | |
| 95 | | | 1 | | | |
| 93 | | | 1 | | | |
| 90 | | | 1 | | 1 | |
| 89 | | | | | | 1 |
| 88 | | | 2 | | | |
| 87 | 1 | | 1 | | | |
| 82 | | | | | 1 | |
| 78 | | | 2 | | | |
| 74 | | | 1 | | | |
| 62 | | | 1 | | | |
| 44 | | | | | 1 | |
| Total No. of Students | 8 | 16 | 24 | 19 | 9 | 8 |

## APPENDIX F

## STATISTICAL FORMULAS

### Pearson Product-Moment Coefficient of Correlation

The Pearson Product-Moment Coefficient of Correlation (r) was calculated in this study. The following raw score formulas were used to compute r.

$$\Sigma x^2 = \Sigma X^2 - \frac{(\Sigma X)^2}{N} \qquad (1)$$

$$\Sigma y^2 = \Sigma Y^2 - \frac{(\Sigma Y)^2}{N} \qquad (2)$$

$$\Sigma xy = \Sigma XY - \frac{(\Sigma X)(\Sigma Y)}{N} \qquad (3)$$

and,

$$r = \frac{\Sigma xy}{(\Sigma x^2)(\Sigma y^2)} \qquad (4)$$

where,

$\Sigma xy$ = sum of the products found by formula (3) above.

$\Sigma x^2$ = sum of squares of the X -- raw scores by formula (1) above.

$\Sigma y^2$ = sum of squares of the Y -- raw scores by formula (2) above.

### Analysis of Variance

Grades of students receiving A or B under specific teachers and their attitudes were tested by means of analysis of variance. The steps for finding the sum of squares were:

Total Variance

Calculation of the total sum of squares, the scores in all sub-groups must represent a single set of measurements. The standard raw score formula used to compute the sum of the squares was:

$$\text{Total S.S.} = {}_{\Sigma}X^2 - \frac{(\Sigma X)^3}{n}$$

Within Groups Variance

In order to find the within S.S. individually calculation of the sum of squares within each sub-group and then the total of all these sums of squares. The formula for within sum of squares is:

Between Group

$$\text{between S.S.} - \frac{(\Sigma X)^2}{N_g} - \frac{(\Sigma X)^2}{N_t}$$

where, $\frac{(\Sigma x)^2}{N_g}$

The total of each group's sum of raw scores were squared and divided by the number of subjects in the group ($n_g$), and $(x)^2/n$, represents the sum of all raw scores squared and divided by the total number of subjects ($n_t$).

Computation and Interpretation of F. F is the value obtained by dividing the between mean square by the within mean square.

$$F = \frac{\text{Between groups mean square}}{\text{Within groups mean square}}$$

where,

$$MS_b = \frac{SS_b}{df}$$

and,

$$MS_w = \frac{SS_w}{df}$$

z-Test

The z-test, a normal sampling distribution, was used to find what difference existed, between the means of two populations or classes. The following formula was used to compute the standard score of (z).

$$z = \frac{\bar{X}_1 - \bar{X}_2}{\bar{X}_1 - \bar{X}_2} \quad \text{where,}$$

the estimated standard error for the sampling distribution of the differences in means.

$$\bar{X}_1 - \bar{X}_2 = \frac{s_1^2}{n_1 - 1} + \frac{s_2^2}{n_2 - 1}$$

$\bar{X}_1$ = sample mean for first group

$\bar{X}_2$ = sample mean for second group

$\bar{X}_1 - \bar{X}_2$ = estimated standard error of the sampling distribution of the differences of sample means.