DOCUMENT RESUME

ED 029 818 SP 002 594

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Videotape Project.
Spons Agency-Mississippi State Univ., State College. Bureau of Educational Research.
Pub Date Dec 68
Note-26p.
EDRS Price MF-$0.25 HC-$1.40
Descriptors-*Achievement, Observation, Student Teachers, *Teacher Attitudes, *Video Tape Recordings

A study was devised to test two null hypotheses, that there would not be significant differences between two groups of education majors both in attitude change as measured by the Minnesota Teacher Attitude Inventory (MTAI), toward children and school work and in knowledge achievement when one group observed supplementary video tapes of classroom activities for an educational psychology course and the other did not. Two sections of a one-semester educational psychology course given prior to student teaching were selected to serve as experimental (N=32) and control (N=31) groups. Both groups completed a precourse intelligence test, and a pre- and posttest in educational psychology, and a pre- and postcourse attitude inventory (MTAI). The experimental group was taught by conventional methods supplemented with video tapes of classroom activities, and the control group was taught by conventional methods only. Analysis of covariance (used to compensate for significant pretest differences) showed no significant differences between the experimental and control groups in attitude change or in achievement level, supporting both null hypotheses. (Included are a 12-item bibliography and a review of literature concerning attitudinal changes of prospective teachers, instructional television, and observation in teacher training.) (SM)

# VIDEOTAPE PROJECT

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DECEMBER 1968

The research reported herein was performed pursuant to a grant from the Bureau of Educational Research, College of Education, Mississippi State University. Researchers undertaking such projects under the Bureau's sponsorship are encouraged to express freely their professional judgment in the conduct of the project. Points of view or opinions stated do not, therefore, necessarily represent the official Bureau of Educational Research position or policy.

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# INTRODUCTION

In recent years many persons have become concerned with the type of people entering the teaching profession. As a result of this concern, studies have been made to determine the qualities necessary for successful teaching. One of the attributes found to correlate closely with a person's ability to teach was the attitude toward children and school work (Cook, Leeds, Callis, 1951).

In a recent study of Mississippi State University students applying for admission to teacher education, it was found that the students scored close to the national norm in their major subject; but on the average they were below the national norm in their attitude toward children and school work (Walker, 1966).

In 1963, the National Council for the Accreditation of Teacher Education stated that pre-student teaching laboratory experiences must be provided. Under present conditions at Mississippi State University the chance for students to observe children is almost impossible, due to the lack of demonstration schools and facilities in close proximity to the University.

It has been found that purposeful observation via television is as effective as in-classroom observation (DeViney, 1962). Since the first opportunity for observation for students at Mississippi State University has been during the student teaching experience, it was felt that a more realistic attitude toward the classroom might be obtained if the students were given the opportunity to observe classroom activities during initial classes in education.

Two studies at Mississippi State University determined that scores on the Minnesota Teacher Attitude Inventory were more positive previous to student

teaching experiences than afterward (Hilyer, 1967; Gewinner, 1967).

## STATEMENT OF THE PROBLEM

Since the attitudes of student teachers at Mississippi State University did change when they had the opportunity to observe and participate in classroom activities, the question follows: Would changes also occur in attitudes as measured by the Minnesota Teacher Attitude Inventory when they were provided with observational experiences using video tapes prior to student teaching?

Television has been used successfully in a number of studies as a supplement to conventional instruction. On the basis of these studies this experiment also undertook to determine the difference in gains made in course content in educational psychology using conventional instruction that was supplemented with video tapes of classroom activities as opposed to conventional instruction alone.

## PURPOSE OF THE STUDY

This study was undertaken to determine if the use of video tapes of actual classroom activities would bring about attitude changes toward children and school work. This was measured by the Minnesota Teacher Attitude Inventory.

This study was also undertaken to determine if the use of video tapes as a supplement to instruction in educational psychology would increase knowledge of the subject matter.

## NULL HYPOTHESES TO BE TESTED

1. There is no significant difference in the change of attitude, as measured by the Minnesota Teacher Attitude Inventory, toward children and school work when the experimental group is shown classroom activities by using video tapes and the control group has no such observational experiences.

2. There is no statistically significant difference between the measured achievement scores of students taking educational psychology after the experimental group is taught by conventional methods supplemented by video tapes and the control group is taught by conventional methods only.

## PROCEDURES AND METHODOLOGY

Source of video tapes. One and a half years were spent filming selected behaviors that would be studied in first year educational psychology (see Appendix A). The original video tapes were taken by placing a remote control camera, equipped with a zoom lens and two microphones, into the classrooms and recording the regular classroom procedure. Some of these behaviors which did not occur normally, such as programmed instruction and individual testing, were staged. These video tapes were edited and made into tapes of twelve to thirty minutes duration and shown in conjunction with the syllibus of the course.

Selection of population. At Mississippi State University every student who majors in education is required to take educational psychology. In the Spring of 1968 five sections of educational psychology were scheduled. Only two of these sections were taught by the same instructor. Therefore, in order to control the teacher variable these two sections were chosen.

Registration for the five sections was left to student choice as their recitation schedule permitted.

A number of students who were registered for these two classes were not included in this study for one or more of the following reasons. The students:

1. had completed student teaching requirements
2. were repeating the course
3. had one or more years of full-time experience
4. had not planned to earn a teaching certificate
5. dropped the course during the study
6. did not complete all test instruments used in the study.

The experimental and control groups were designated by the simple process of flipping a coin. The experimental group consisted of 32 students taking educational psychology at 9:00 Tuesday, Thursday, and Saturday. The control group consisted of 31 students taking educational psychology at 1:00 Monday, Wednesday, and Friday.

Treatment of groups. The experimental group was taught by conventional methods supplemented by video tapes, and the control group was taught by conventional methods only. The video tapes were constructed to show actual classroom experiences and to supplement the instruction about behaviors that were studied in educational psychology. Both treatment groups were given pre and post-tests in educational psychology and about their attitudes. An intelligence test also was administered to both groups.

Selection of measuring instruments. The Minnesota Teaching Attitude Inventory was selected for use in this study for the purpose of determining the students' (education majors) attitudes toward children and school work. The test was designed to measure the attitude which helps predict how well a person will get along with pupils in interpersonal relationships and, indirectly, how well satisfied he will be with teaching, The most direct use to which the Minnesota Teaching Attitude Inventory can be put is the selection of students for teaching preparation and the selection of teachers for teaching positions (Cook, Leeds, Callis, 1951).

A comprehensive test in educational psychology was constructed by the instructor. A pre-test of random questions from the comprehensive test was administered. The complete comprehensive test in educational psychology was administered as the post-test. (See Appendixes B and C) The reliability coefficient for the 91 items on the tests in their final form was .83. Test reliability was determined by an item analysis study utilizing Kuder-Richardson's Formula 20. "Face" validity of the test items was checked by faculty members from the Mississippi State University Educational Psychology Department.

## REVIEW OF THE LITERATURE

The review of the literature for the study involved three areas:

1. Attitudinal changes of prospective teachers;
2. Instructional television;
3. Observation in teacher training.

Attitudinal changes of the prospective teachers. There have been a number of studies conducted concerning attitude changes of experienced teachers. Since the study was concerned primarily with student teachers, the research of the literature was limited to attitude changes which occur during professional education courses previous to clinical teaching experience.

Pinckney (1962) found that the attitudes of 203 students toward pupil behavior, as measured by a behavioral ranking scale before the taking of a course in introductory psychology, did not show a significant correlation with the attitudes of a group of clinicians measured by the same instrument before the students took a course in introductory psychology. However, there was a statistically significant correlation after the students had completed the course. The attitudes of a control group of peers who did not take the course did not correlate significantly with the clinicians on either the pre-test or post-test.

McCullough (1961), using the Minnesota Teaching Attitude Inventory as a measuring instrument, found that attitudes of prospective teachers changed in a positive direction during the period of accelerated professional education courses and in a negative direction during the period of student teaching.

DeViney (1962) found that there was no significant difference in the attitudes of students who had observed actual classes via television and those who had not observed any classes. This lack of significant difference was true on both a pre-test and post-test when using the Minnesota Teacher Attitude Inventory as a measuring instrument.

An investigation was made during the academic year of 1954-55 by Dunham (1958) which had as two of its purposes:

1. to determine whether there were any significant changes in the attitudes of student teachers toward youth during the period of concentrated study in professional education or the period of intensive student teaching;
2. to determine whether the greatest amount of change in the attitudes of student teachers toward youth occurred during their period of concentrated study in professional education or during their period of intensive student teaching.

The test instrument used was the Minnesota Teacher Attitude Inventory. It was administered at three different intervals:

1. Prior to professional educational courses;
2. At the end of educational classes and immediately preceeding student teaching;
3. Immediately following student teaching.

Fisher's "t" was used to statistically test significance. Dunham found that during the program of on-campus professional education at Indiana University a change in a positive direction was noted in student teachers' attitudes toward youth. However, during the off-campus teaching a negative direction toward youth was effected.

Instructional Television. In a summary of studies prepared for the U.S. Department of Health, Education and Welfare by Reid and MacLennan, 1967, it was reported that the effectiveness of teaching by television had been tested under varied circumstances and with a wide range of subjects. The University of Illinois Medical College taught a basic psychology course via television. The University of Houston utilized television in teaching elementary psychology and biology. In these experiments and others like them, the evidence

has shown that there is no statistically significant difference between the performance of the student taught by television and the student taught by the conventional method.

Observation in teacher training. For many years most educators have recommended that observational experiences be included as an integral part of teacher training. The National Council for the Accreditation of Teacher Education requires that observational experiences be provided (American Association of Colleges for Teacher Education, 1967).

With the advent of educational television, studies were begun to determine if this media could adequately provide these experiences. A number of recent studies in the area are cited here.

Abel (1961) compared the effectiveness of using closed-circuit television for classroom observation with film and direct observation methods. Groups were matched on the basis of Miller Analogies Test scores and on an instrument designed to measure course subject matter. Students were then randomly assigned to either television, film, or direct observation. Analysis of the data revealed no statistically significant differences in the scores of the three groups at the end of the testing period.

DeViney (1962) conducted a study to determine if a difference in achievement and attitude between pupil-teacher relations could be detected as a result of television observation. Control and experimental groups were designated with the control groups receiving no television observational experiences. Final analysis of the data revealed no statistically significant differences between the groups.

Chabe (1962) found that television observation was almost as effective as guided classroom observation, and television observation allowed student teachers to observe the same situation as the classroom observers. The use of television to teach teachers has proven to be one answer to the large

number of students needing to observe classroom situations when a limited number of elementary classrooms are available.

This chapter has presented a partial survey relative to attitudinal changes of prospective teachers, instructional television, and observation in teacher training. These studies indicate that much thought and research is being given to the use of closed-circuit television in all phases of teacher preparation.

These studies also indicate a concern about the attitudinal changes that occur while students are in the teacher training program.

## STATISTICAL PROCEDURES

The "t" test was used to evaluate the pre-test data obtained in this study. The pre-tests of both treatment groups were analyzed, and statistically significant differences were found to exist in the areas of intelligence and attitude. Therefore, since the control and experimental groups could not be matched on all the criterion variables, the analysis of covariance was used as the basic design for this study.

Analysis of the Results from the Pre-tests. Table I discloses that a statistically significant difference existed between the mean Intelligence Quotients of the experimental and control groups from the pre-tests, California Short Form Tests of Mental Maturity, 1963, S-Form, Level 5.

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Insert Table I here

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Table II discloses that a statistically significant difference existed between the mean attitude scores of the experimental and control groups from the pre-tests, Minnesota Teaching Attitude Inventory.

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Insert Table II here

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Table III discloses that no statistically significant difference existed between the mean achievement scores from the pre-test of random questions selected from the Comprehensive Educational Psychology Test.

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Insert Table III here

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Analysis of the Results from Post-test Scores. Table IV shows that, when post-test scores were adjusted for pre-test scores, there was no significant difference found between the experimental and control groups in attitude. Hypothesis number one, there is no significant difference in the

change of attitude as measured by the Minnesota Teacher Attitude Inventory toward children and school work when the experimental group is shown classroom activities by using video tapes and the control group has no such observational experiences, was accepted.

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Insert Table IV here

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Table V shows that, when post-test scores were adjusted for pre-test scores, there was no significant difference found between the experimental and control groups in achievement. Hypothesis number two, there is no statistical significant difference between the measured achievement scores of students taking educational psychology after the experimental group is taught by conventional methods supplemented by video tapes and the control group is taught by conventional methods only, was accepted.

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Insert Table V here

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# SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

Summary. This study was undertaken to determine if the use of video tapes of actual classroom activities would bring about attitude changes toward children and school work. This change was measured by the Minnesota Teacher Attitude Inventory. This study was also undertaken to determine if the use of video tapes as a supplement to instruction in educational psychology would increase knowledge of the subject matter.

At Mississippi State University every student who majors in education is required to take educational psychology. In the Spring of 1968 five sections of educational psychology were scheduled. Only two of these sections were taught by the same instructor. Therefore, in order to control the teacher variable, these two sections were chosen. Registration for the five sections was left to student choice as their recitation schedule permitted. The experimental and control groups were designated by the simple process of flipping a coin. The experimental group consisted of 32 students taking educational psychology at nine o'clock on Tuesday, Thursday and Saturday. The control group consisted of 31 students taking educational psychology at one o'clock on Monday, Wednesday and Friday. The experimental group was taught by conventional methods supplemented by video tapes, and the control group was taught by conventional methods only. Both groups were given pre- and post-tests about their attitudes and knowledge of educational psychology. The California Short-Form Test of Mental Maturity was administered to both groups.

The "t" test was applied to test the difference between the means of the pre-test of both groups, with respect to intelligence, attitude and knowledge of educational psychology.

The analysis of covariance was applied to test the difference between the adjusted means of the post-tests of both groups.

Following is a summary from the statistical analysis of the data:

1. The null hypothesis, which stated there is no significant difference in the change of attitude, as measured by the Minnesota Teacher Attitude Inventory, toward children and school work when the experimental group is shown classroom activities by using video tapes and the control group has so such observational experiences, was accepted.
2. The null hypothesis, which stated there is no significant difference between the measured achievement scores of students taking educational psychology after the experimental group is taught by conventional methods supplemented by video tapes and the control group is taught by conventional methods only, was accepted.

Conclusions. The following conclusions are drawn from the data presented in this study:

1. No statistically significant difference was found between the adjusted means of the attitude scores of the control and experimental groups;
2. No statistically significant difference was found between the adjusted means of the achievement scores of the control and experimental groups.

Recommendations, It is recommended that further study with these groups be continued through student teaching to see if there is a difference in attitude and subject matter knowledge after a period of time.

TABLE I

SIGNIFICANCE OF THE DIFFERENCE BETWEEN THE MEAN INTELLIGENCE QUOTIENT OF THE EXPERIMENTAL AND CONTROL GROUPS OBTAINED FROM THE PRE-TEST, CALIFORNIA SHORT-FORM TEST OF MENTAL MATURITY, 1963, S-FORM, LEVEL 5

| Treatment Groups | Mean IQ | SD | $SE_D$ | t | Level of Confidence of 63 |
|---|---|---|---|---|---|
| Experimental | 114.16 | 19.08 | 4.12 | 2.26 | P<.05 |
| Control | 123.58 | 13.11 | | | |

TABLE II

SIGNIFICANCE OF THE DIFFERENCE BETWEEN THE ATTITUDE OF THE EXPERIMENTAL AND CONTROL GROUPS OBTAINED FROM THE MINNESOTA TEACHING ATTITUDE INVENTORY

| Treatment Groups | Mean Attitude Score | SD | $SE_D$ | t | Level of Confidence with 63 df |
|---|---|---|---|---|---|
| Experimental | 49.59* | 29.25 | 6.74 | 2.14 | P<.05 |
| Control | 64.00* | 24.04 | | | |

*To eliminate negative numbers a plus 45 was added to each raw score.

TABLE III

SIGNIFICANCE OF THE DIFFERENCE BETWEEN THE MEAN ACHIEVEMENT SCORES OF THE EXPERIMENTAL AND CONTROL GROUPS OBTAINED FROM THE PRE-TEST OF RANDOM QUESTIONS SELECTED FROM THE COMPREHENSIVE EDUCATIONAL PSYCHOLOGY TEST

| Treatment Groups | Mean Accurate Score | SD | $SE_D$ | t | Level of Confidence with 63 df |
|---|---|---|---|---|---|
| Experimental | 27.16 | 5.62 | 1.28 | 0.13 | P>.05 |
| Control | 27.32 | 4.36 | | | |

TABLE IV

ANALYSIS OF COVARIANCE OF POST-TEST SCORES ADJUSTED FOR PRE-TEST SCORES FROM THE MINNESOTA TEACHING ATTITUDE INVENTORY BETWEEN THE EXPERIMENTAL AND CONTROL GROUPS

| Source of Variance | Sums of Squares | df | Mean of Squares | F |
|---|---|---|---|---|
| Treatments | 240.5352 | 1 | 240.5352 | 0.412 |
| Error | 35,061.4102 | 60 | | |
| TOTAL | 35,301.9453 | 61 | | |

TABLE V

ANALYSIS OF COVARIANCE OF POST-TEST SCORES ADJUSTED FOR PRE-TEST SCORES OBTAINED FROM THE COMPREHENSIVE EDUCATIONAL PSYCHOLOGY TESTS

| Source of Variance | Sums of Squares | df | Mean of Squares | F |
|---|---|---|---|---|
| Treatments | 56.0565 | 1 | 56.0569 | .918 |
| Error | 3,541.6846 | 58 | 61.0635 | |
| TOTAL | 3,597.7415 | 59 | | |

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# APPENDIX A

## THE NATURE OF EDUCATIONAL PSYCHOLOGY

I. Stimulus variables
   - A. Environmental contest
   - B. Teaching method
   - C. Questions asked by the teacher
   - D. Problem to be worked

II. Organismic variables

Any characteristic of the learner constitutes an organismic variable:
   - A. Intelligence and other psychological traits
   - B. Social class membership
   - C. Physical traits

III. Response variables
   - A. Verbal answers to questions
   - B. Physical responses
   - C. Emotional responses

Length of Film - 12 minutes

## OBSERVING AND INTERPRETING

I. Reinforcement Frame of Reference
   - A. Classical Conditioning
   - B. Instrumental Conditioning
     1. Reward
     2. Secondary reward

Length of Film - 12 minutes

## CONSTITUTIONAL DETERMINANTS OF DEVELOPMENT

I. Maturation and Readiness
   - A. Bases of readiness
     1. Adequacy of past learning
     2. Motivation
     3. Maturation

II. Cultural Determinants of Development
   - A. Cultural Norms
   - B. Social Sanctions
   - C. Group Membership

III. Social Structure of a School
   - A. Roles
   - B. Status

Length of Film - 12 minutes

## EMOTIONAL AND SOCIAL DEVELOPMENT

I. Emotional Development
   - A. The characteristics of the stimuli that evoke a particular emotion (stimulus variable)
   - B. The physiological changes occurring when the emotion is experienced (organismic variable)
   - C. The overt response pattern to the experienced emotion (response variable)
   - D. Modifying the expression of an emotion
   - E. Two general types of emotions
   - F. Fear

II. Social Development
   - A. Measuring social acceptance
     Sociometric techniques
     1. Isolates
     2. Stars
     3. Fringes
     4. Cliques

Length of Film - 15 minutes

## GENERAL NATURE OF LEARNING

I. School Learning
   - A. Educational Objectives - Cognitive Domain
     1. Knowledge
     2. Comprehension
     3. Application
     4. Analysis
     5. Synthesis
   - B. Educational Objectives - Affective Domain
     1. Receiving
     2. Responding
   - C. Drive, Cue, Response, Reinforcement
     1. Drive
     2. Cue
     3. Response
     4. Reinforcement
   - D. Continuous and Partial Reinforcement
     1. Continuous
     2. Partial

II. Guiding Learning
   - A. Learning Experience Variables
     1. Method variables
   - B. Environmental Variables
     The environmental conditions under which learning occurs

Length of Film - 12 minutes

# GUIDING LEARNING

I. Research on Teaching Methods
   A. Then versus Now
      1. Then
      2. Now
         a. A wider range of techniques are used in the modern school to motivate children to learn.
         b. A greater variety of learning experiences are provided in the modern school.
         c. A more comprehensive evaluation of student progress characterized the modern school.
   B. Programmed Instruction
      1. Machine or book
      2. Program
      3. Frames
      4. Response made by student
      5. Knowledge of results

II. Classroom Social Climate
   (As a stimulus variable in learning)
   A. Teacher - Pupil relationships
      1. Emotional quality
         a. respect - disrespect
         b. tension - relaxation
         c. fear and anxiety - feeling of security
      2. Harmony - disharmony
      3. Stimulative - restrictive
      4. Authoritarian - Democratic
   B. Discipline
      1. Disciplinary measures used by the teacher

Length of Film - Four films at 30 minutes each

Copies of Appendixes B and C can be obtained upon request from the Bureau of Educational Research, Mississippi State University.