AN EXPERIMENTAL STUDY TO DETERMINE THE EFFECTS OF PROACTIVE SET, RETROACTIVE SET, AND LACK OF SET ON THE LEARNING WHICH RESULTS FROM THE PRESENTATION OF INSTRUCTIONAL FILMS

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PREFACE

In 1954 the writer became interested in the utilization of instructional films while doing research for his Master's thesis. He was very impressed with the results of the Newcastle Reading Experiment at Thaddeus Stevens School in Newcastle, Pennsylvania, where colored picture films had been used in the reading program. This interest was further developed during the two years the writer taught Educational Psychology courses at Oklahoma State University (formerly known as Oklahoma Agricultural and Mechanical College) where he used instructional films in the classroom. During the summer of 1956, while working at the Oklahoma State University Audio-Visual Center, he had the opportunity to observe the various ways in which films were utilized by instructors.

Some instructors showed films without any discussion either prior to or after the film presentations. In some instances, instructors discussed significant aspects or made comments on the films prior to the film showings with no discussion afterwards. In other instances, the films were shown without any prior discussion but the instructor made comments on the films or discussed significant concepts of the films after the film presentations.

These observations aroused the curiosity of the writer as to the relative effectiveness of the various procedures for utilizing instructional films. He became interested in determining whether more effective learning resulted from discussing films prior to showing the films as compared to discussing the films after the films were shown and also

whether showing films without any discussion would be equally efficacious. The writer hopes the present investigation will be of some value in this area.

The writer wishes to express his sincere appreciation to the persons who made possible the filfillment of this investigation. He is especially indebted to the members of his Advisory Committee; Professor Roy Gladstone, Chairman, for his encouragement and invaluable guidance throughout the course of this investigation, Professor Harry K. Brobst, for his helpful suggestions regarding tests and for providing testing materials and the facilities of the Bureau of Tests and Measurements, and Professor Joseph S. Vandiver.

Special acknowledgement is due Mr. Guy Pritchard for making the facilities of the Audio-Visual Center at the Oklahoma State University available. For his guidance with the statistical design of the experiment the writer is grateful to Dr. Carl Marshall. For his assistance with the statistical computations the writer expresses his appreciation to Mr. David Weeks. The diligent and painstaking work of Miss E. Grace Peebles in typing this dissertation is greatly appreciated. For her myriad contributions toward the fulfillment of this dissertation the writer is most indebted to his wife Frances. The writer wishes to acknowledge the contribution of the Audio-Visual Center at Oklahoma State University in defraying in part the cost of the research.

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CHAPTER I

INTRODUCTION AND REVIEW OF THE LITERATURE

This investigation is concerned with methods for the effective utilization of instructional films. The review of the literature which follows will deal with: the usefulness of instructional films as teaching devices; the influence of set on learning and perception; the influence of guide questions on learning from films; and the role of concepts and principles in effective learning.

The Usefulness of Instructional Films as Teaching Devices

There is considerable evidence from research carried on by the Armed Forces, by industry, and in the field of education that instructional films can be utilized effectively in the learning and retention of information, in perceptual-motor learning and in influencing attitudes and opinions.[1]

Up to a decade ago a large portion of the research was concerned with the relative effectiveness of educational films as compared with other educational media.[2] Since World War II there has been a tremen-

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[1]Charles F. Hoban, Jr. and Edward B. Van Ormer, Instructional Film Research 1918-1950 (Rapid Mass Learning) (Port Washington, L. I., 1950), Chapter 9, page 1; Edgar Dale, J. D. Finn, and C. F. Hoban, Jr. "Research on Audio-Visual Materials," National Society for the Study of Education Forty-eight Yearbook, Part 1 (Chicago, Ill., 1949) pp. 261-266.

[2]William H. Allen, "Audio-Visual Materials," Review of Educational Research, XXVI (April 1956) p. 125.

dous expansion in the production and use of educational films due to (or at least concomitant with) the widespread acceptance of educational films as teaching aids. Since 1945 the emphasis in film research has shifted to the investigation of variables within the materials themselves and methods for the most effective utilization of instructional films.[3]

According to Wittich and Fowlkes (1946), they were among the first to conduct an investigation comparing methods for utilizing sound films most advantageously in the classroom. They say:

> The present investigators advance the premise . . . that the teaching . . . film makes a valuable contribution to learning situations in the classroom. This premise established, their study develops and tests three methods of using such a film to its greatest advantage in the classroom. As such, the present investigation is a pioneer in a new area of research in audio-visual aids.[4]

In a review of the literature, Wittich and Follkes point out that during the period from 1918 to around 1941 the experimental research on instructional films was concerned with comparisons between films and other methods of instruction and (since the inception of sound films) with comparisons between silent and sound films.[5]

Allen (1956) tends to substantiate the claim of Wittich and Fowlkes to being pioneers in research on methods of using films most advantageously in the classroom. Allen points out that the emphasis in the entire period prior to 1945 was on comparative studies of different kinds of technics.[6]

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[3]Allen, "Audio-Visual Materials," p. 125.

[4]Walter Arno Wittich and John Guy Fowlkes, Audio-Visual Paths to Learning (New York, 1946), p. ix, Preface.

[5]Ibid., pp. 6-21.

[6]Allen, "Audio-Visual Materials," p. 125.

The effectiveness of a given procedure for using films is to a great extent a function of the effect of that procedure on the perception of the film by a given audience. This is essentially a psychological problem. The next section will examine some of the established psychological principles of perception which may have implications for the use of instructional films.

The Influence of Set on Learning and Perception

The problem of perception by visual, auditory, or other sensory impressions, according to Dale, Finn and Hoban (1949), has been a subject of investigation since the beginning of experimental psychology.[7]

Experimental investigations in this area have established that one of the significant determinants of an individual's perception is his set or readiness to react or respond to certain aspects of a situation. The individual tends to perceive that to which his attention is directed, that for which, in short, he has a set.

Vernon (1952) reports an experiment by Külpe (1904) in which subjects were exposed to tachistoscopic presentations of groups of nonsense syllables in different colors and arranged in different groupings. Külpe found that the subjects perceived and recalled those elements for which they had a prior set.[8]

Chapman (1932), using tachistoscopic presentations of block letter consonants, found that set induced by instruction prior to exposures resulted in a significantly greater number of correct reports than did

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[7]Dale, Finn, and Hoban, Jr., "Research on Audio-Visual Materials," p. 253.

[8]M. D. Vernon, A Further Study of Visual Perception (Cambridge, England, 1952), p. 215.

set induced after the presentation.[9]

Kingsley (1932) found that when subjects were instructed to search for a given feature prior to the presentation of a picture they often developed a tendency to see that object in a particular way. When subjects were instructed to look for a turkey, they looked for a whole turkey and overlooked a turkey's head.[10]

In 1934, Kingsley performed a similar experiment, but reversed the procedure. He presented the complex picture first and then instructed the subjects to search for a given feature. His findings confirmed that of the earlier experiment, but he points out that "this method gives a more adequate preparation for discovery than the earlier method making the test easier and quicker."[11]

Reviews of experimental research by Gibson (1941) emphasized the importance of set as a determinant of perception.[12]

A more recent publication by Vernon (1952) contains a comprehensive review of some of the numerous experiments on the effect of set on perceptual learning. He emphasizes the importance of developing proper sets in order to facilitate learning. Vernon states:

It is clear that the voluntary direction of awareness is improved, not

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[9]D. W. Chapman, "Relative Effects of Determinate and Indeterminate Aufgaben," American Journal of Psychology, XXXXIV (1932), pp. 163-174.

[10]H. L. Kingsley, "An Experimental Study of 'Search'," American Journal of Psychology, XXXXIV (1932), pp. 314-318.

[11]H. L. Kingsley, "The Influence of Instruction and Context Upon Perceptive Search," American Journal of Psychology, XXXXVI (1934), pp. 437-442.

[12]James G. Gibson, "A Critical Review of the Concept of Set in Contemporary Experimental Psychology," Psychological Bulletin, XXXVIII (1941), pp. 781-817.

only by experience and by motivation, but also by 'knowing what to look for'. Hence, the importance of expert tuition in teaching the beginner to look for, that is to say, to direct his awareness towards certain particular features of the situation, rather than to maintain a general alertness to the situation as a whole.[13]

McGeoch and Irion (1952) also stress that an individual's set can significantly influence learning. They say:

. . . an active set to learn . . . is a powerful determiner of learning, whether the learning be the fixation of the verbal series, the establishment of a conditioned response, or the discovery and fixation of the solutions of perceptual-motor and rational problems.[14]

More recent studies reported in the literature tend to substantiate the earlier findings. Hill (1953) reported that set was a significant determinant of subjects' perceptual judgments of geometric patterns.[15] Costiloe (1955) found that, upon the introduction of an appropriate set, subjects were able to perceive words which were previously reported to be below the perceptual threshold.[16]

Allport (1955) maintains that:

It has long been known that particular sets of the individual, . . . either long standing or momentary, affect the selection of the objects that will be perceived and to some extent the readiness with which they are perceived . . . they also result in greater attentive clearness or vividness of these objects.[17]

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[13]Vernon, A Further Study of Visual Perception, pp. 214-215.

[14]John A. McGeoch and Arthur L. Irion, The Psychology of Human Learning (New York, 1952), pp. 227-228.

[15]Charles W. Hill, "Perceptual Judgments as a Function of Mental Set, Anchoring Point, and Method of Judgment," Journal of Experimental Psychology, XXXXVI (1953), pp. 325-328.

[16]Carol Spencer Costiloe, "A Study of the Facilitation of the Perceptual Process Through the Introduction of a Specific Set," Doctor's Dissertation, The University of Oklahoma, Norman, 1955, pp. 76 (microfilm).

[17]Floyd H. Allport, Theories of Perception and the Concept of Structure (New York, 1955), p. 65.

According to Allen (1956), introductions to educational films should provide a favorable motivational "set" in order to increase learning from films. He includes guide questions as a means of inducing proper motivational set in the introduction of films.[18]

The use of guide questions has been recommended as an aid to effective reading, studying, and learning because they direct attention to and give the individual a set or readiness for response to significant concepts or meanings.

The next section will review the studies, reported in the literature, where guide questions were used with instructional films.

The Influence of Guide Questions on Learning From Films

There has been a paucity of research studies reported in the literature pertaining to the use of guide questions in connection with the presentation of educational films. This is true, even though a number of instructor's manuals which accompany instructional films contain guide questions and recommend their use. Two experiments are reported, one by Wittich and Fowlkes and the other by VanderMeer, in which guide questions were used to some extent with the presentation of educational films.

Wittich and Fowlkes (1946) compared three methods of using 27 social studies and science films with 4th, 5th and 6th grade students.[19] In the first method there was no organized class preparation. The presentation of a film was followed by an information test. In the second method, the class was prepared by reading a brief description of the film content,

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[18]William H. Allen, "Research on Film Use: Class Preparation," Audio-Visual Communication Review, III (Summer 1955), p. 183.

[19]Wittich and Fowlkes, Audio-Visual Paths to Learning, pp. 29-75.

a study of difficult words and phrases in the film track, a study of guide questions related to the film content, followed by the film and a test. The third method included all the procedures of the second method plus the answering of pre-arranged discussion questions and the viewing of the film a second time, followed by a second administration of the same test.

There were so many additional procedures used in the two methods using guide questions that it is difficult to determine the extent to which increments in learning could be attributed to the guide questions. The authors point out that the average time taken for the first method was 35 minutes, for the second method, 45 minutes, and for the third method, 90 minutes. There were considerable differences in the amount of time spent for each of the three methods. These temporal differences constitute an uncontrolled experimental variable as increments in learning were concomitant with increases in the amount of time for the three methods. Increments in learning for each of the three methods may have been due to some extent to differences in the amount of time spent on each method.

Allen (1955) also points out in reference to Wittich and Fowlkes' study that no delayed recall test was given, so there is no way of knowing how well the material learned was retained.[20]

In 1949 VanderMeer used guide questions in an experimental investigation concerned with the extent to which educational films could be substituted for teachers.[21] Although this study was not concerned with the effective utilization of guide questions or set, it is discussed here as

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[20]William H. Allen, "Research on Film Use: Class Preparation," Audio-Visual Communication Review, III (Summer, 1955), p. 185.

[21]A. W. VanderMeer, "Relative Effectiveness of instruction by: films exclusively, films plus study guides, and standard lecture methods," Technical Report SDC (State College, Pa., 1950), pp. 51.

it may have some implications relevant to the use of guide questions.

Three groups of 9th grade high school students, equated for intelligence, were taught a four-unit course in general science during the course of one semester. One group was taught by being shown a series of 44 films alone. The second group was taught by being shown these films and studying specially prepared short study guides before and after each film, without any assistance or participation on the part of the instructor. The third group was taught by conventional methods. The investigation revealed no significant differences between the three groups when tested on the learning and retention of factual information. The function of the teacher for the film group and the film plus study group was solely to take attendance, maintain order and operate a schedule of motion pictures.

The classroom situation with the group that used study guides was a highly artificial one. Students were asked to read and answer questions to study guides without assistance from the teacher. The experimenters admit that they encountered difficulty in motivating this group to work on the answers to the guide questions. The authors do not mention similar motivational difficulties with the other two groups. This introduces motivation as an uncontrolled experimental variable.

Also inherent in the method using study guides is the introduction of another uncontrolled experimental variable, reading ability. The study as reported did not measure the reading achievement of the pupils. There is a possibility that the level of reading achievement of 9th grade pupils might affect their comprehension (and utilization) of guide questions.

The introduction of two uncontrolled experimental variables - motivation and reading ability - tends to negate the value of the experimental

results at least in relation to the effectiveness of the use of guide questions.

A summary of the literature indicates that there are two investigations reported in the literature which deal with the efficacy of guide questions when used with instructional films. One of the studies reported that significant increments in factual learning resulted from the utilization of guide questions; the other that no significant gains accrued from the use of guide questions. An analysis of the experimental procedures used in these studies indicates that there were a number of uncontrolled experimental variables which in each case precludes the possibility of drawing valid inferences relative to the effect of guide questions on the learning which results from instructional films. Since the subjects used in both of these investigations were elementary school children, the findings may not be applicable to higher grade levels.

The term "learning" is used in educational and psychological literature to refer to a wide range of behavioral phenomena. The next section will discuss the specific learning outcomes with which this study is concerned.

The Role of Concepts and Principles in Effective Learning

Within recent years there has been increasing emphasis in the field of education on the development of meaningful concepts and understanding of principles as important instructional objectives.[22]

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[22]The phrase "understanding of principles" is preferred to "learning of principles" because principles, according to Brownell and Hendrickson, can be learned with or without some degree of understanding. Too often, principles are learned by students as "memorized sequences of ill-understood words." (William A. Brownell and Gordon Hendrickson, "How Children Learn Information, Concepts, and Generalizations," National Society for the Study of Education Forty-ninth Yearbook, Part I (Chicago, Ill., 1950), p. 124.) In terms of meaning for the learner, the "learning of principles" by this process is equivalent to or at a level not much higher than that of nonsense syllable learning.

Anderson and Gates (1950) maintained that perhaps the most significant recent developments in the psychology of learning, particularly as they relate to instruction, are in the field of cognition, in the psychology of meaning, concept formation, and understanding, in what Judd called the higher mental processes.[23] According to Brownell (1946), the acquisition of factual knowledge is an important educational outcome but understandings are also of critical significance.[24] Tyler's studies at Ohio State University and the University of Arkansas (1936) showed that factual information can be learned without understanding and without the ability to apply that information to new situations. He found positive but low correlations between the ability to recall facts and the ability to apply these facts.[25] Other studies by Tyler at Ohio State University (1934) on the retention of learning indicate that after a lapse of 15 months most of the specific factual information was forgotten whereas there was no loss in the ability to apply principles to new situations. There was a gain of almost 25 percent in the ability to interpret new experiments in the school subjects under investigation.[26]

Hoban and Van Ormer report only a few studies during the period from 1918 to 1950 which purport to deal with conceptual learning, understanding principles, or making inferences as instructional outcomes. Reviews

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[23]Lester G. Anderson and Arthur I. Gates, "The General Nature of Learning," National Society for the Study of Education Forty-ninth Yearbook, Part I (Chicago, Ill., 1950), p. 14.

[24]Brownell, "Introduction: Purpose and Scope of the Yearbook," p.3.

[25]Ralph W. Tyler, "The Relation between Recall and Higher Mental Processes," Education as Cultivation of the Higher Mental Processes (New York, 1936), pp. 6-17.

[26]Ralph W. Tyler, "Some Findings from Studies in the Field of College Biology," Science Education, XVIII (1934), pp. 133-142.

of the experimental research on instructional films by Hoban and Van Ormer (1950) and Allen (1956) indicate that the work in the area of ideational learning has been concerned largely with the acquisition or retention of factual information.[27]

This investigation is concerned with the understanding and application of principles in child and adolescent development as instructional outcomes.

Summary

In the last decade the emphasis in film research has shifted from comparisons of films with other educational media to comparisons of methods for utilizing films. It has been indicated that in a given situation, an individual's preparatory set plays an important role in perception and learning. The use of guide questions has been recommended as a method of inducing preparatory set in order to increase learning from films. An analysis of two studies using guide questions with films revealed that there were uncontrolled experimental variables which in both instances precluded the possibility of drawing valid inferences as to the efficacy of the use of guide questions. In addition, both of these experiments were done with a population of elementary school children and the findings may not be applicable to a population of college students.

Most of the research with instructional films has been concerned with the acquisition of factual information though there is increasing emphasis in the field of education on the development of understandings as educational outcomes.

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[27] Hoban and Van Ormer, Chapter 3, pp. 5-8; Allen, "Audio-Visual Materials," pp. 125-126.

CHAPTER II

THE PROBLEM

This chapter will be concerned with the purpose of the present investigation, a delineation of the problem, the hypotheses to be tested and the assumptions which are made.

Purpose of the Study

Some instructional films are accompanied by teachers' guides which include a list of prepared questions recommended for discussion before the film showing. Other teachers' guides contain a list of questions recommended for discussion after the film showing. Questions used before the film showing tend to develop a preparatory set for selected concepts in the film. Questions used after the film direct the students' attention to perceive selected portions of the film in retrospect, as set or readiness to perceive selected portions of the film is not developed in anticipation of the film but retroactively, after viewing the film. In still other cases, teachers' guides suggest two showings of the same film as a means of increasing learning.

It has been shown experimentally that two showings of a film will result in more learning than one showing of a film. McTavish (1949), using four general science films with college freshmen enrolled in general science courses, found statistically significant increments in factual learning resulting from two showings of a film as compared to

a single film showing.[1]

Some teachers' guides recommend both guide questions and two showings of a film. But the length of time required for guide questions plus two showings of a film precluded the use of such a procedure in this investigation as the educational psychology classes, which participated in the experiment, met for 50-minute class periods.

The purpose of the present investigation is to determine which of the first three procedures is more effective in promoting learning.

Statement of the Problem

This study will investigate the effects on learning of three procedures recommended by teachers' guides accompanying instructional films. These procedures are:

1. The effect of preparatory set induced by the use of guide questions before a film showing.

2. The effect of retroactive set induced by the use of guide questions after a film showing.

3. Two showings of the same film without the set induced by guide questions used before or after the film showings.

Null Hypotheses

The null hypotheses to be tested in this experiment are stated below:

1. There is no difference in the learning which results from the establishment of proactive set prior to a film showing and retroactive

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[1] C. L. McTavish, Effect of Repetitive Film Showings on Learning (Port Washington, L. I., 1949), p. 7.

set established after a film showing.

2. There is no difference in the learning which results from the establishment of proactive set prior to a film showing and two showings of the same film without either proactive or retroactive set.

3. There is no difference in the learning which results from the establishment of retroactive set after a film showing and two showings of the same film without either proactive or retroactive set.

Assumptions

1. The standardized tests used in this experiment are valid for the purposes for which they are used.

2. The 72-item multiple-choice test developed by the experimenter is a valid measure of understanding of the principles under scrutiny.

3. Guide questions discussed before a film showing will induce proactive set by directing attention proactively to significant portions of the film.

4. Guide questions discussed after a film showing will induce retroactive set by directing attention retrospectively to significant portions of the film.

5. When a film is shown twice, the first showing will not result to a significant degree in the development of a set to respond to important principles upon the second showing of the same film.

The next chapter will deal with the procedure used in this experimental investigation.

CHAPTER III

PROCEDURE

In this chapter, relevant experimental variables will be examined, the physical conditions under which the experiment was conducted will be described, and the population of subjects, films and tests will be discussed.

Five sections in educational psychology at Oklahoma State University were used in the experiment. Each section was divided into three groups equated for achievement in psychology. One of the three experimental procedures was used for each group. There were five replications of each of the three experimental procedures, one replication for each of the five sections.

Differences in learning as a function of the three procedures were measured by two achievement tests. One test, A Study of Sam Smith,[1] was used both as a pre-test and as a post-test. The other was a 72-item test developed by the experimenter. A Study of Sam Smith was used to provide a measure of differences in increments in learning as a function of the three procedures while the achievement test developed by the experimenter was administered after the experiment and was used to provide a measure of differences in learning as a function of the three procedures.

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[1]John E. Horrocks and Maurice E. Troyer, Instructors Guide and Norms (Syracuse, New York, 1946).

In addition, the Otis Quick Scoring Mental Ability Test[2] was administered to determine if there were any significant differences in intelligence among the experimental groups. If there were significant differences in intelligence, an analysis of covariance would be made in order to make allowance for the effects of initial differences in intelligence on the two achievement tests used in this experiment. If there were no significant differences in intelligence, an analysis of variance would be made in order to estimate differences in achievement as a function of the three experimental treatments used in this experiment.

Experimental Variables

It is meaningless to speak in the abstract of the effectiveness of educational films. There is increasing recognition in the literature on educational films that the value of specific educational films is contingent, among other things, upon the content, organization, clarity and manner of presentation of the film and the degree to which the film is suited to the level of maturity, educational and conceptual background and level of intelligence of the student.[3]

In the present experiment a systematic effort was made to hold constant or control those variables which might affect the results. Every effort was made to select films which were adequate in content and organization and which would also typify that population of films which are used in courses in educational psychology and child and adolescent development.

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[2]Arthur S. Otis, Manual of Directions for Gamma Test (New York, 1954).

[3]Hoban and Van Ormer, Chapter 1, p. 1.

The same three films used in the experiment were shown to all the experimental groups; thus, the film variable was held constant for all the experimental groups and any differences in achievement between the experimental groups cannot be logically attributed to the nature or inherent organization of the films used.

However, there is experimental evidence that the benefits that a learner derives from a specific learning experience depends largely upon his conceptual background in the area and his intelligence (or academic aptitude). It is widely recognized in educational and psychological circles that motivation plays an important role in learning. Human motivation is, of course, a highly complex phenomenon and one which is not readily amenable to objective measurement. In the present experiment the assumption is made that the degree of motivation of the three experimental groups is not dissimilar. Observations of the experimental groups' behavior and the fact that the attendance figures for the film showings were almost identical for the experimental groups tend to validate this assumption.

Gladstone (1954) reported, in a study carried on at Oklahoma State University, that students who had completed a course in introductory psychology achieved higher grades in educational psychology than students who had not taken an introductory course.[4] From this it would appear that conceptual background in psychology may be a significant experimental variable in achievement in the area of child and adolescent development which is included in the Educational Psychology Courses at Oklahoma State University and covered by the films used in the present investiga-

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[4]Roy Gladstone, "The Psychology Prerequisite to Educational Psychology," Journal of Educational Psychology, XXXXV (1954), pp. 415-420.

tion.

Hoban and Van Ormer (1950) and Smith (1952) report that individuals of higher intelligence will learn substantially more from educational films than will individuals of lesser intelligence.[5] Other investigators report that individuals of low intelligence will benefit more from instructional films than from other educational media. However, acceptance of the latter findings does not negate the fact that individuals of higher intelligence may learn more from instructional films than will individuals of lesser intelligence. The intelligence factor may thus also be a significant experimental variable.

It would appear essential (or at least highly desirable) to control or to make allowance for initial differences among the experimental groups in these two variables — achievement in psychology and intelligence. The Engle Psychology Test (Form Bm)[6] was used to measure general achievement in psychology. The Otis Quick Scoring Mental Ability Test (Form Gamma Am)[7] was used as an index of intelligence.

It would have been desirable to match the experimental groups on both intelligence and achievement in psychology. To do this might have necessitated such a drastic reduction in the size of the sample used that it might have seriously impaired the reliability of the results. Therefore, the three groups within each of the five sections were equated on achievement in psychology and an analysis of variance of scores on the

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[5]Hoban and Van Ormer, Instructional Film Research, Chapter 7, pp. 17-23; Herbert A. Smith, "Intelligence as a Factor in the Learning Which Results from the Use of Educational Sound Motion Pictures," Journal of Educational Research, XXXXVI (1952), pp. 249-261.

[6]T. L. Engle, Manual, Engle Psychology Test (New York, 1953).

[7]Ibid.

Otis Quick Scoring Mental Ability Test was carried out to determine if there were any significant differences in intelligence among the experimental groups. If there were statistically significant differences in intelligence test scores among the groups, an analysis of covariance was to be made in order to adjust for the effects of initial differences in intelligence on the achievement tests used.

Subjects

Students enrolled in all five sections of educational psychology at the Oklahoma State University during the spring semester 1956-57 participated in this experiment. At the beginning of the experiment there were a total of 239 subjects, but as a result of attrition (failure to see one or more of the films or take one or more of the tests). the final experimental population consisted of 168 subjects. The distribution of the final experimental population is shown in Table I. Some of the significant characteristics of the subjects are given in Table II.

Films

The three McGraw-Hill instructional films used are listed in the sequence of their presentation in the experiment.

Physical Aspects of Puberty deals with the period of adolescent development known as puberty.[8] Puberty is characterized by physical changes preparatory to sexual maturity. This film describes the bodily changes during puberty, the effects of these changes on the behavior of adolescents, and some of the problems which may result. This film is intended to improve understanding of bodily changes in puberty and the

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[8]Physical Aspects of Puberty (Adolescent Development Series), McGraw-Hill Book Co., Inc. (New York, 1953), 16 mm., black and white, sound, 19 minutes.

TABLE I

DISTRIBUTION OF 168 SUBJECTS INTO THREE EXPERIMENTAL GROUPS

Sex	Group I	Group II	Group III
Male	29	21	17
Female	27	35	39
Total	56	56	56

TABLE II

CHARACTERISTICW OF SUBJECTS (N = 168)

Characteristics	Mean	S.D.	S.E.	Range
Age	21.50	3.64	0.28	18-42
Years of College Completed	1.80	0.73	0.56	0-4
Otis Raw Scores	53.70*	7.50	0.57	22-73*
Engle Raw Scores	46.61	10.69	0.82	17-70

*Otis Raw Scores converted to Otis I. Q.:

53.70 (raw)	22-73 (raw)
112.00 (I.Q.)	80-131 (I.Q.)

effects of these physical changes on the emotional and social development of the adolescent boy and girl. The importance of sympathetic parental relationships is stressed for helping adolescents in these "in between years."

Shyness shows how isolates (shy children) are identified through the utilization of sociometric techniques in the classroom.[9] The underlying causes of shyness in the three children are elaborated upon. In one instance, Robert's shyness is a perfectly normal manifestation of preoccupation with independent interests and activities. In the other two cases, shyness represents a disturbance of normal social and emotional development which is traced to excessive parental demands. Anna's shyness stems from a lack of confidence due to her failure to measure up to the standards of an over-demanding mother while for Jimmy, shyness manifests itself as fear of normal association with his peers stemming from his insulation from normal social contacts by an overprotective mother. A psychiatrist works with parents and teachers to help bring about a better adjustment of Jimmy and Anna.

Promoting Pupil Adjustment. The locale of this film is a high school classroom.[10] The film shows how a sympathetic and understanding teacher handled problems of pupil adjustment in her classroom and how she provided for individual differences in the mental abilities, interests and home backgrounds of her pupils. Two problems are given special emphasis in this film. One deals with the effect on a pupil of a change

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[9]Shyness (Mental Health Series), McGraw-Hill Book Co., Inc., (New York, 1953), 16 mm., black and white, sound, 23 minutes.

[10]Promoting Pupil Adjustment (Planning for Teaching Series), McGraw-Hill Book Co., Inc., (New York, 1956), 16 mm., black and white, sound, 20 minutes.

from a small farm community to a larger urban community. The other deals with the effect of anxiety about a family situation on a student's behavior in class. The film shows how the teacher's sympathetic understanding, patience, tact and skill played an important role in enabling her to find the causes of her pupils' difficulties.

The experimenter prepared for each of the films a set of 11 principles dealt with in each film, each principle was accompanied by one or more guide questions. (See Appendix A).

Tests

The four tests used in the experiment will be discussed in the order in which they were administered.

Engle Psychology Test, Form Bm. This test was administered to all the subjects during the week prior to the film experiment and was used as a measure of achievement in psychology.[11] There are two equivalent forms, Am and Bm. Forty minutes is allotted for the examination. The test is recommended as an index of achievement in psychology for high school students upon completion of a course in introductory psychology and for college students at the beginning of an introductory psychology course.

Reliability. The reliability of the Engle Psychology Test was estimated in two ways: the split-half reliability coefficients (corrected by the Spearman-Brown formula) derived from the correlation of the odd and even items in Form Am of the test and alternate-form reliability derived by correlating the scores on the two forms of the test, Forms Am

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[11] T. L. Engle, Manual, Engle Psychology Test (New York, 1953).

and Bm. The split-half reliability coefficients for five samples, totaling 351 subjects, ranged from .90 to .92. The alternate-form reliability coefficients for three samples of size 47, 68 and 52 were .87, .86 and .77 respectively. The Manual does not mention the specific characteristics of the population from which the samples were taken.[12]

Norms. The normative group was composed of 1,113 high school students who were in the process of completing a course in psychology, representing 32 high schools in 20 states. The median age of the group was 17 years and 9 months and the median I. Q., according to the Terman-McNemar Test of Mental Ability, was 106.[13]

Validity. The items in the Engle Psychology Test were developed from seven textbooks used in high school psychology courses. Nine major topics covered in these texts were covered in the test. The percentage of test items for each of the nine topics corresponded closely to the ratio of pages devoted to these topics in the seven texts. It is reasonable to assume that the curricular validity of the test would be high in classrooms where one or more of the texts, used in the development of the test, would be utilized. An item validation study was done and for each form the 80 items having the greatest discriminatory value were retained. No validation of the test against an objective criterion is reported in the Manual although mention is made that the opinions of experts were sought to aid in the determination of the objectives and content of the test.[14]

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[12] Ibid., p. 5.

[13] Ibid., p. 3.

[14] Ibid., p. 2

A fundamental question for the present investigation was whether the Engle Psychology Test, which was standardized on a population of high school students, would furnish an adequate estimate of achievement in psychology for a population of college students. The experimenter did a validation study during the spring semester of 1956 at Oklahoma State University with a sampling of 89 students who were close to completion of a one-semester course in introductory psychology. Scores on the Engle Psychology Test were correlated with achievement in psychology as measured by cumulative scores on four teacher-made multiple-choice type tests. A coefficient of correlation of .74 was found between scores on the Engle Psychology Test and achievement in psychology as measured by scores on the teacher-made tests. These results indicate that the Engle Psychology Test furnishes a reasonably valid estimate of achievement in psychology.

A Study of Sam Smith. This test was used both as a pre-test and a post-test to measure increments in understanding and application of principles in adolescent development as a function of the experimental procedures used.[15] It is one of a number of case-study tests published by the Syracuse University Press in their Tests in Adolescent Development series. A Study of Sam Smith is presented in three sections. The first section describes in case study form the difficulties that Sam Smith encounters in a classroom situation. The second and third sections elaborate successively upon the source of Sam's difficulties and present information derived from home visits, teachers' reports and other sources. Following each diagnostic item, the student taking the test is asked to check one of five alternatives ranging from true, possibly true, no

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[15] John E. Horrocks and Maurice E. Troyer, Instructors Guide and Norms (Syracuse, New York, 1946).

evidence, possibly false and false. For each remedial item there are five alternatives ranging from very advisable, advisable, undecided, inadvisable and very inadvisable. The scores for each of the items, both remedial and diagnostic, are weighted on the basis of the degree to which they correspond to the judgments of ten experts.[16] The Guide does not report any quantitative indices as to the degree of agreement among the experts. There is considerable variation in the range of credits assigned for responses for the different test items. The highest range of credits for responses to any item is from plus four to minus four but the range of credits for some items is as low as from plus two to minus one.

Reliability. The Guide reports a reliability coefficient of .73 for A Study of Sam Smith.[17] However, it does not indicate the method used for derivation of the reliability coefficients, whether split-half or test and re-test correlation. There is no mention made of the size and characteristics of the population used in computing the reliability coefficients.

Norms. Tentative norms for A Study of Sam Smith were based on 306 students.[18] The population on which the norms were based was composed of students enrolled in courses in adolescent psychology, educational psychology, mental hygiene, rural education, educational measurement and clinical psychology at four universities.

Validity. A fundamental question for the case-study tests (and for

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[16]Ibid., p. 2.

[17]Ibid., p. 2.

[18]Ibid., p. 5.

all tests) is whether these tests are valid. The Guide accompanying the test reports that an item-validation study was made. Those items that did not correlate positively with the total scores and with the appropriate sub-scores were not retained. This item validation furnishes an index of the internal consistency of the test or the extent to which the items measure what the test as a whole measures. An even more fundamental question pertains to the objective validity of the test. According to the Guide, the criterion of correctness of a given response is based on the degree to which the response corresponds to the responses of ten experts.[19] If the judgments of the experts are accepted as valid, then it may be assumed that the test is valid. The crucial question is how valid is a procedure which determines the correctness of responses by the degree to which these responses correspond to those of experts? Here again, in many life situations the judgements of experts are often considered the best criteria to go by. It would appear reasonable to assume that a group of experts would have a much greater probability of being correct in their judgments than would other groups.

Evaluation. The particular value of A Study of Sam Smith and the other case study tests is that they furnish a measure of the ability to apply classroom learnings and insights to novel, life-like situations. As in real life situations, a course of action is rarely absolutely right or wrong. There are various gradations of the appropriateness or correctness of a given response or course of action. This is reflected in the weights assigned to the responses that can be made.

Watson, in a critical review, states: "The case studies represent

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[19] Ibid., p. 2.

the best examples the reviewer has found of the application of objective techniques to the measurement of insight into psychological relationships in personality."[20]

A Study of Sam Smith would appear to be useful as an objective measure of the ability to apply classroom learnings to situations which simulate real life conditions.

Film Achievement Test. A 72-item multiple-choice achievement test based on principles inherent in each of the films was developed by the experimenter. (See Appendix A.) The criterion for the selection of each test item was that the correct response could be given on the basis of understanding and application of the specific principles. There were 24 items for each of the three films making a total of 72 items. Care was taken to avoid inclusion of items which could be answered on the basis of recall of factual information in the films. A tape recording was made of the sound tracks of the three films and the experimenter saw each film at least 20 times in an effort to eliminate those items which could be answered correctly on the basis of recall of specific information contained in the sound track of the films.

Reliability. The reliability coefficient for the Film Achievement Test was .86. This was estimated by the split-half reliability coefficient obtained by the correlation of the odd and even test items and corrected by the Spearman-Brown formula.

Validity. The curricular validity of the test may be established by the fact that each of the items was chosen on the basis of direct examination of the film content. The claim to logical validity of the test

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[20]Goodwin Watson, The Third Mental Measurements Yearbook, (Oscar Krisen Buros, ed.) (New Brunswick, N. J., 1949), pp. 406-407.

is based on a critical examination of the test by three professors at Oklahoma State University, two in the Department of Psychology, and one in the Department of Family Relations and Child Development. All three had taught courses in the area of child and/or adolescent development.

There was no item validation study carried on prior to the experiment as the entire population of educational psychology students enrolled in the spring 1957 semester at Oklahoma State University participated in the experiment and it was feared that preliminary use of the test (prior to the experiment) with a pilot group might result in the dissemination of some of the test items from the pilot group to the experimental group.

Otis Quick Scoring Mental Ability Test, Gamma Test, Form Am. This test was used as a measure of intelligence for the experimental groups.[21] The Gamma test is used extensively in high schools and colleges as an index of academic aptitude. The test contains 80 items which are essentially similar in content to other widely used intelligence tests. These items pertain to vocabulary, mathematics problems, verbal analogies, verbal synonyms and antonyms and reasoning ability. The time limit on the test is 30 minutes.

Reliability. The reliability of the Gamma test was estimated by the split-half reliability coefficient, which involved the correlation of odd and even items on the test. These were corrected by the Spearman-Brown formula. Corrected reliability coefficients for Form Am for Grades 10, 11 and 12 were .90, .91, and .85 respectively. These reliability coefficients were based on about 100 students in each of the three

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[21]Arthur S. Otis, Manual of Directions for Gamma Test (New York, 1954).

grades reported.[22]

Norms. Age norms are reported in years and months ranging from 11 years to 18 years. Norms are reported for 11 years and 0 months for every month up to 18 years. The last classification is for 18 years and above. The norms for Gamma Am were based on a total sampling of 3,180 pupils. The Manual fails to give the characteristics of the population(s) on which the norms are based.[23]

Validity. Each test item was validated by determining the consistency of the item with the total test score. The bi-serial coefficient of correlation was computed for each item and the total score on the test. Two hundred adults, half-male and half-female were used in the validation study. The median coefficient was plus .61. It would appear that the procedure used furnishes an adequate measure of item validity.[24]

The validation of the Otis Quick Scoring Mental Ability Test has been in the nature of correlating scores on this test with achievement in college and with other academic aptitude tests. Traxler (1945) reported correlations between scores on the Otis Quick Scoring Mental Ability Test and the Freshman edition of the ACE for two samples, each consisting of approximately 1,000 high school students. The coefficient of correlation was .819 for the Otis and the 1941 ACE and .781 for the Otis and the 1942 ACE.[25] Sartin (1946), using a sample of 50 college freshmen, found a higher correlation between scores on the Otis Quick Scoring Men-

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[22]Ibid., p. 5.

[23]Ibid., p. 4.

[24]Ibid., p. 6.

[25]Arthur E. Traxler, "The Correlation between Two Tests of Academic Aptitude," School and Society, LXI (1945), pp. 383-384.

tal Ability Test and school achievement as measured by grades than between ACE scores and grades. The difference in the coefficients of correlation was not statistically significant.[26]

Evaluation. The Otis Quick Scoring Mental Ability Test appears to compare favorably with other widely used mental ability tests as a measure of academic aptitude and as a predicter of academic achievement even though it is considerably shorter than most of the tests which are widely used for this purpose.

The administrative procedures used in this experiment will be discussed in the next section.

Experimental Procedures

The purpose of this section is to describe the administration of the experiment, the physical conditions under which the experiment was carried on, the experimental treatments used, the specific instructions given to each of the three experimental groups, and other pertinent data.

Prior to the experiment all the subjects were informed that they would participate in an experiment to determine the effectiveness of several methods for using instructional films.

Two tests were administered to the subjects by the experimenter during the week preceding the film showings. The Engle Psychology Test was used as a measure of achievement in general psychology. A Study of Sam Smith was used as a pre-test to measure achievement in the areas of child and adolescent development.

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[26] A. Q. Sartain, "A Comparison of the New Revised Stanford-Binet, the Bellevue Scale and certain group tests of intelligence," Journal of Social Psychology, XXIII (1946), pp. 237-239.

The subjects in each of the five educational psychology sections were divided into three experimental groups equated for achievement in psychology on the basis of their scores on the Engle Psychology Test.

The final experimental population consisted of 168 subjects divided equally among the three experimental groups. The 56 subjects in each group were not distributed equally among the five sections because of initial differences in the class size of the sections and also the effects of attrition. When the analysis of variance was carried out, the abbreviated Doolittle technique was used to make allowance for the differences in sample size.

Physical Conditions of the Experiment

Three rooms at the Oklahoma State University Audio-Visual Center, adequate with reference to size, ventilation and facilities for eliminating light, were used for this experiment. The rooms were sufficiently far apart so that the sounds from one room could not be heard in either of the other two rooms. The doors to each of the three rooms were closed during each session in order to eliminate distracting sounds or noises. Each group saw each of the three films in the same room and under the same experimental conditions each time.

Group I, for each of the five sessions, met in Room One during the entire week of the experiment and saw each of the three films (one film at each session) with Treatment One (proactive set).

Group II met in Room Two during the entire week and saw each of the three films with Treatment Two (retroactive set).

Group III met in Room Three throughout the entire week of the experiment and saw each of the three films twice (one film at each session)

with Treatment Three (without the set induced by guide questions either before or after the film showings).

The three groups in each section met simultaneously during the regular classroom periods but in different rooms at the Audio-Visual Center. While the experimenter was meeting with Group I, two other instructors were meeting with and giving the film introductions to Groups II and III.

In order to hold the conditions for presentation of the guide questions as constant as possible, the experimenter discussed the guide questions used with both Groups I and II. He gave the film introduction and discussed the guide questions with Group I. In the interim, two other instructors were reading the film introductions to Groups II and III, following which they presented the films. After the guide questions had been discussed and the film started for Group I, the experimenter went to Room Two (where by this time Group II was approaching the end of the film showing) and after a slight break following the end of the film, he distributed and discussed the guide questions with Group II. For Group III, the same instructor was in charge throughout and gave the short introductions for all three films.

Standardized instructions were given to the three experimental groups. For Groups I and II the identical instructions were given to all of the ten sections within the two groups. For Group III the instructions were different than those for the other two groups, but the same (standardized) instructions were given to the five sections within this group.

Specific Treatments

In this section, there will be a presentation of the three different

experimental procedures.

Group I - Proactive Set

The following introduction to Physical Aspects of Puberty was given by the experimenter:

> Perhaps one of the most difficult periods both for children and their parents and teachers is the age of adolescence. One phase of adolescence is known as puberty. Puberty refers to the physical changes which are preparatory to manhood and womanhood. This film describes the bodily changes during puberty, the effects of these changes on the behavior of adolescents, and some of the problems which may result.
>
> This film is intended to help you to understand the physical aspects of adolescent development and how these physical changes affect the emotional and social development of the adolescent boy and girl. Moreover, we hope this film will give you increased insight into the problems of adolescence and encourage you to apply this understanding in future relations with children going through those "in between years."

For introductions to the films Shyness and Promoting Pupil Adjustment, see Appendix C.

Following the introduction, mimeographed sheets listing 11 principles and pertinent guide questions were distributed. (See Appendix A.) Each principle was read aloud by the experimenter, who elaborated on the application of the principle. (See Appendix B.) Following the reading and illustration of the principles, the subjects were told to look for the application of the principles when viewing the film. The film was shown after the experimenter had discussed all 11 principles. At the conclusion of the film showing, the guide questions were collected and the session was terminated.

Group II - Retroactive Set

The same introduction was given to Group I and Group II for each of the three films. See introductions to Physical Aspects of Puberty on pp. 38-39 and to Shyness and Promoting Pupil Adjustment in Appendix C.

Immediately following the introduction by the instructor, Group II was shown the film. After the film showing, the guide questions were distributed by the experimenter. Each of the 11 principles was read to the group and illustrations given (similar to the procedure used for Group I.) After this, the subjects were instructed to try to answer the questions following the principles on the basis of their recollection of the film they had just seen. Then the guide questions were collected and the session was terminated.

Group III - Lack of Set

The introductions to the three films for Group III were different from the introductions for Groups I and II. The instructor gave the following introduction to Physical Aspects of Puberty:

> This film is intended to help you understand the physical aspects of adolescent development and how these physical changes affect the emotional and social development of the adolescent boy and girl.
>
> There will be two showings of this film during this period, with a short break between showings. Please do not leave until you have seen the film twice.

For Group III introductions to Shyness and Promoting Pupil Adjustment, see Appendix C.

There was a short break between the two showings of the film to allow time for rewinding the film. Following the second film showing, the session was terminated without discussion.

Procedures Following the Film Presentations

At the end of the last film session, all of the subjects were notified that two tests relating to the films would be administered the following week. Since this would be mid-semester examination week at the University, the subjects were told that their scores on these two tests would constitute a portion of their mid-semester grades.

The first two periods following the week during which the films were shown were devoted to the administration of two achievement tests, A Study of Sam Smith as a post-test and the Film Achievement Test developed by the experimenter. The Otis Quick Scoring Mental Ability Test was administered two weeks after the achievement tests in order to avoid giving too many tests in a relatively short span of time and also because it coincided with the time the educational psychology classes were studying the topic of intelligence testing.

Summary

One hundred sixty-eight students enrolled in five sections of educational psychology at Oklahoma State University were the subjects for the experiment. Two standardized tests were administered prior to the experiment. These were A Study of Sam Smith, which was used as a pretest of achievement in the broad areas under investigation, and the Engle Psychology Test, Form Bm, which was used as an index of achievement in psychology. Each of the five sections were divided into three groups equated for achievement in psychology on the basis of their performance on the Engle Psychology Test. The same three films were shown to all the subjects, but a different procedure was used for each of the three experimental groups. The three procedures were replicated five times,

one replication for each of the five sections.

The week following the film showings, two tests were administered to measure differences in learning as a function of the three film treatments. These tests were A Study of Sam Smith as a post-test and a 72-item multiple-choice Film Achievement Test developed by the experimenter. The next week, the Otis Quick Scoring Mental Ability Test was administered in order to determine if there were any statistically significant differences in intelligence among the experimental groups.

The experimental results are reported in the next chapter.

CHAPTER IV

RESULTS

In this chapter the statistical findings of this investigation will be presented and an analysis of variance of the mean scores of three tests will be reported.

Statistical findings will be presented on the Otis Quick Scoring Mental Ability Test, the Film Achievement Test and A Study of Sam Smith. For each test, findings of an analysis of variance will be reported in terms of F values.

Otis Quick Scoring Mental Ability Test

On the Otis Quick Scoring Mental Ability Test there were no statistically significant differences among the means of the three experimental groups and among the means of the five sections. None of the F values for groups, for sections or for interaction reached the .05 level.

The Results are presented in Tables III, IV and V.

Film Achievement Test

On the Film Achievement Test there were no statistically significant differences among the means of the three experimental groups or among the means of the five sections. None of the F values for groups, for sections or for interaction reached the .05 level.

The Results are presented in Tables VI, VII and VIII.

TABLE III

SCORES ON THE OTIS QUICK SCORING MENTAL ABILITY TEST FOR THE THREE EXPERIMENTAL GROUPS

Group	N	Mean	S.D.
I	56	53.10	10.07
II	56	51.19	11.80
III	56	53.89	8.69
Total	168	52.73	10.33

TABLE IV

SCORES ON THE OTIS QUICK SCORING MENTAL ABILITY TEST FOR THE FIVE SECTIONS

Section	N	Mean	S.D.
I	40	52.92	11.23
II	32	49.40	8.90
III	41	52.21	9.53
IV	34	55.91	10.36
V	21	53.28	10.38
Total	168	52.73	10.33

TABLE V

ANALYSIS OF VARIANCE OF SCORES ON THE OTIS QUICK SCORING MENTAL ABILITY TEST FOR FIVE SECTIONS OF EDUCATIONAL PSYCHOLOGY AND THE THREE EXPERIMENTAL GROUPS WITHIN THE FIVE SECTIONS

Source	d.f	Sum of Squares	Mean Square	F
Sections, ignoring groups	4	716.40	179.10	
Groups, adjusted	2	192.16	96.08	1.58
Interaction (sections X groups)	8	483.43	60.42	0.55
Groups, ignoring sections	2	215.39	107.69	
Sections, adjusted	4	693.17	173.29	2.86
Between Cells	14	1,392.00		
Within Cells (error)	153	16,534.93	108.07	
Total	167	17,926.94		

None of the F vlaues is significant at the .05 level.

TABLE VI

SCORES ON THE FILM ACHIEVEMENT TEST FOR THE THREE EXPERIMENTAL GROUPS

Group	N	Mean	S.D.
I	56	61.10	5.09
II	56	60.62	5.54
III	56	61.21	4.21
Total	168	60.98	4.98

TABLE VII

SCORES ON THE FILM ACHIEVEMENT TEST FOR THE FIVE SECTIONS

Section	N	Mean	S.D.
I	40	61.50	4.15
II	32	60.18	5.10
III	41	60.43	5.48
IV	34	62.05	4.31
V	21	60.52	5.83
Total	168	60.98	4.98

TABLE VIII

ANALYSIS OF VARIANCE OF SCORES ON THE FILM ACHIEVEMENT TEST FOR FIVE SECTIONS OF EDUCATIONAL PSYCHOLOGY AND THE THREE EXPERIMENTAL GROUPS WITHIN THE FIVE SECTIONS

Source	d.f.	Sum of Squares	Mean Square	F
Sections, ignoring groups	4	86.85	21.71	
Groups, adjusted	2	10.74	5.37	0.32
Interaction (sections X groups)	8	134.22	16.77	0.65
Groups, ignoring sections	2	11.03	5.51	
Sections, adjusted	4	86.55	21.63	1.28
Between Cells	14	231.82		
Within Cells (error)	153	3,937.12	25.73	
Total	167	4,168.94		

None of the F values is significant at the .05 level.

A Study of Sam Smith

On A Study of Sam Smith there were no statistically significant differences in mean increments (on the scores from pre-test to post-test) among the three experimental groups. The F values for both groups and interaction did not reach the .05 level.

There were statistically significant differences in mean score increments among the five sections. The F value for sections was 4.06; this is significant at the .05 level. An F value of this magnitude could occur by chance only four times in a hundred.

The Results are presented in Tables IX, X, and XI.

Summary

There were no statistically significant differences at the .05 level among the means of the three experimental groups on the Otis Quick Scoring Mental Ability Test, the Film Achievement Test and A Study of Sam Smith.

There were no statistically significant differences at the .05 level among the means of the five sections on the Otis Quick Scoring Mental Ability Test and the Film Achievement Test. There were statistically significant differences among the mean increments of the five sections on A Study of Sam Smith.

TABLE IX

MEAN CHANGE IN SCORES ON A STUDY OF SAM SMITH FROM PRE-TEST TO POST-TEST FOR THE THREE EXPERIMENTAL GROUPS

Group	N	Mean	S.D.
I	56	12.82	33.86
II	56	8.44	19.78
III	56	14.23	26.77
Total	168	11.83	31.17

TABLE X

MEAN CHANGE IN SCORES ON A STUDY OF SAM SMITH FROM PRE-TEST TO POST-TEST FOR THE FIVE SECTIONS

Section	N	Mean	S.D.
I	40	21.40	30.53
II	32	4.87	31.33
III	41	9.34	36.19
IV	34	7.23	25.54
V	21	16.52	24.19
Total	168	11.83	31.17

TABLE XI

ANALYSIS OF VARIANCE OF THE CHANGE IN SCORES ON A STUDY OF SAM SMITH FROM PRE-TEST TO POST-TEST FOR FIVE SECTIONS OF EDUCATIONAL PSYCHOLOGY AND THE THREE EXPERIMENTAL GROUPS WITHIN THE FIVE SECTIONS

Source	d.f.	Sum of Squares	Mean Square	F
Sections, ignoring groups	4	6,645.65	1,661.41	
Groups, adjusted	2	9,748.93	4,874.46	2.99
Interaction (sections X groups)	8	13,004.28	1,625.53	1.74
Groups, ignoring sections	2	1,019.29	509.64	
Sections, adjusted	4	6,601.25	1,650.25	4.06*
Between Cells	14	20,624.83		
Within Cells (error)	153	142,568.49	931.82	
Total	168	163,193.32		

*This is the only F value which is significant at the .05 level.

CHAPTER V

INTERPRETATIONS AND CONCLUSIONS

In this chapter the statistical data will be interpreted, differences between the findings of this investigation and the one by Wittich and Fowlkes will be discussed; implications of the findings of this investigation for the set concept will be examined; and a summary of the findings and conclusions will be presented.

The purpose of this investigation was to determine the relative efficacy of three procedures for presenting films. For this reason the emphasis in interpreting the findings of an analysis of variance of the two achievement tests will be on the significance of the differences among the means of the three experimental groups.

An interpretation of the statistical data will be presented on the Otis Quick Scoring Mental Ability Test, the Film Achievement Test and A Study of Sam Smith.

The Otis Quick Scoring Mental Ability Test

There were no statistically significant differences in intelligence, as measured by the Otis Quick Scoring Mental Ability Test, among the three experimental groups or among the five sections. On the basis of the statistical data we cannot reject the hypothesis that the Otis test scores of the sampling used in this investigation were derived from a

common population of test scores.

The Film Achievement Test

On the Film Achievement Test there was less than one point difference among the means of the three experimental groups and the F value, which was less than one, was far from statistical significance. We cannot infer from the statistical evidence that one experimental method was more effective than the other in terms of its effect on achievement as measured by this test.

The Study of Sam Smith

We cannot infer from the statistical data that one experimental method was more effective than the other in terms of its effect on achievement as measured by score increments on A Study of Sam Smith from pre-test to post-test.

It is true that, when an analysis of variance was carried out, only the F value for sections was significant at the .05 level. This, however, does not affect the findings of this investigation regarding the relative efficacy of three experimental procedures as in the statistical analysis the effects of differences among the five sections were removed from the comparison among groups.

Discussion of the Differences Between the Findings of This Investigation and the One by Wittich and Fowlkes

The findings of this investigation appear to be at variance with the findings of Wittich and Fowlkes (see pp. 6-7). They found that students in grades four through six learned more from films when study guides were

used prior to the film presentation as compared to film showings alone. The results of the present investigation indicate that the use of guide questions plus films is not a more effective method in its effect on achievement than film showings alone when time spent in learning activities is kept constant.

The differences in the findings may be due in part to differences in the population of students used and to differences in experimental design. A population of college students with a greater experiential and conceptual background than 4th, 5th, and 6th grade students may learn as much from films alone as from films plus guide questions. In the experimental design of Wittich and Fowlkes the "films only" group saw one showing of a film whereas in this investigation the "films only" group saw each film twice. In the study of Wittich and Fowlkes more time was devoted to the "films plus guide questions" groups as compared to the "films only" group whereas in the present investigation equal time was given to the experimental groups. As a result there were differences both in the number of film showings and in the amount of time allotted to the learning period. These differences may account for the disparity between the findings of the two investigations.

Implications of the Findings for the Set Concept

There were no statistically significant differences in achievement as a function of the three experimental procedures used to determine the effects of proactive set, retroactive set and lack of set on the learning which results from the presentation of instructional films. There is insufficient evidence from the data of this investigation to infer that one method is more efficacious than another in terms of its

effect on achievement as measured by two tests.

The findings of this investigation are not in agreement with the findings of other experimental investigations of set reported in the literature. A number of investigators report that set was a significant determinant of perception and learning (see pp. 3-6 for a review of the research). In the present experiment no evidence was found that set (either preparatory or retroactive) resulted in more efficient learning than did lack of set. Actually the mean scores of Group III, with lack of set, were higher than that of the preparatory set or retroactive set groups on both the Film Achievement Test and A Study of Sam Smith (see Table VI p. 40 and Table IX p. 43).

Differences in the findings may be due in part to differences in the nature of the phenomena under observation. In the other investigations on set which were reviewed the phenomena presented were, in the main, discrete objects such as pictures, nonsense syllables, numbers, letters and geometric patterns. In this investigation the films presented involved continuous motion sequences rather than presentation of discrete entities.

In addition there were differences in the duration of the presentation of the phenomena. In the experimental studies reviewed the phenomena were presented, often tachistoscopically, for short spans of time whereas in this experiment with films, the time span for the presentation of each film was at least 19 minutes.

The hypothesis is presented that differences between the findings of this investigation and other investigations of set may be due in part to differences in the nature of the phenomena under observation and differences in the duration of the presentation of the phenomena.

Summary of the Findings

The purpose of this experimental investigation was to determine the effects of preparatory set, retroactive set and lack of set on the learning which results from the presentation of instructional films.

We cannot infer from the data on the effects of the three experimental procedures used to induce preparatory set, retroactive set and lack of set, that one method was more effective than another in its effect on achievement.

The findings are not in agreement with those of other experimental investigations which found that the establishment of set resulted in more efficacious learning and perception. The hypothesis is presented that differences between the findings of this investigation and other investigations may be due in part to differences in the nature of the phenomena under observation and differences in the duration of the presentation of the phenomena.

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A P P E N D I X

APPENDIX A

Principles and Guide Questions for Each of the Films

Name_____ Date_____Psych. 303, Sec._____

PHYSICAL ASPECTS OF PUBERTY

The following are 11 important principles which are inherent in the film, Physical Aspects of Puberty. Each principle is followed by a guide question intended to direct your attention to the application of the principle in the film.

1. There is a widespread age range for the onset of puberty in boys and girls.

   What is the age range for puberty in boys, according to the film?

2. Girls mature sexually at an earlier age than boys.

   What is the average age of puberty in girls, in boys?

3. Physiological changes may result in heightened irritability and nervousness in girls before and during menstruation.

   How does the film show this in the case of Janie?

4. Adolescents with early sexual development may be interested in the opposite sex sooner than those adolescents with later sexual maturity.

   How does the film show this in the case of the girl with early sexual development?

5. Physical growth in size and strength during adolescence does not necessarily bring with it sexual maturity.

   How does the film show this in the case of the boy who is much taller than his peers?

6. Some of the effects of the physical changes of puberty on adolescents are restlessness, nervousness, and awkwardness.

How does the film show this in the case of Johnny?

7. Adults, with an understanding and sympathetic attitude toward the problems that the adolescent faces, can help the adolescent to avoid feelings of inadequacy.

   How does the lack of sympathetic understanding on the part of Johnny's family contribute to his feelings of inadequacy?

8. Some of the physical changes which accompany puberty such as abdominal protuberance in girls, change of voice in boys, and skin blemishes in boys and girls may make adolescents overly-sensitive and self-conscious.

   What happens to Janie when she gets skin blemishes?

9. The physical stresses and strains of adolescence may result in great fluctuations of appetite from day to day.

   Does Johnny's mother understand this?

10. Adolescents have a greater need for independence than young children; they tend to rebel against adult authority and restraints.

    How does the film show a way for parents to meet this need?

11. Normal adolescence is characterized by the need for increased physical and social activity.

    What kind of activities are indicated in the film which give expression to those needs?

Name_____Date_____Psych. 303, Sec._____

SHYNESS

The following are 11 important principles which are inherent in the film, Shyness. Each principle is followed by a guide question intended to direct your attention to the application of the principle in the film.

1. Sociometric tests are used in the classroom to discover which children are accepted by or are popular with their peers.

   In the film, does the sociometric test indicate which children are accepted by the class?

2. In sociometric tests members of a group are asked to indicate their choices for companions in particular activities.

What were the particular activities mentioned in the sociometric test in the film?

3. Teachers should be concerned with the emotional and social development of their pupils as well as the teaching of subject matter.

How does cousin Frances in the film illustrate that intellectual development alone is not sufficient for a happy and useful life?

4. Shy children are not necessarily maladjusted or well adjusted.

How does the film show this in relation to the three shy children -- two had serious emotional problems and one whose adjustment was considered normal?

5. For healthy social development, most children need participation in play activity with their peers.

What effect does being sheltered from contacts with other children have on Jimmy?

6. Continually setting standards too high for the child to live up to has a negative effect on the child's personality development.

How does Anna react to her mother's criticism?

7. Young children's behavior is motivated largely by the desire to win the love and approval of their parents.

How does Anna react to performing for her mother's friends?

8. The child who fails repeatedly in his efforts to achieve his goals tends to give up trying rather than to try harder.

How is this shown in the case of Anna?

9. Shyness is a personality trait which is learned and may be changed.

How was the shyness of the two children overcome in the film?

10. One way in which a teacher may help a child to overcome feelings of inadequacy is to give the child a feeling of accomplishment.

How does Mrs. Smith, the gym teacher, help to give Anna a feeling of accomplishment?

11. Group situations in which children are encouraged to express and share their feelings can help individuals to overcome their fears.

How do the free discussion periods in the the film help Anna?

Name_____Date_____Psych. 303, Sec._____

PROMOTING PUPIL ADJUSTMENT

The following are 11 important principles which are inherent in the film, Promoting Pupil Adjustment. Each principle is followed by a guide question intended to direct your attention to the application of the principle in the film.

1. Teachers should be concerned with individual differences in mental ability of pupils and differences in interests and background.

   What are some of the differences in her pupils' abilities and interests which the teacher mentions in the film?

2. A pupil who feels rejected by the other pupils may fail to make any effort to win social acceptance.

   How does Bill react when he feels he is not accepted by the other pupils?

3. The change from one community to an entirely different community may cause the pupil difficulty in adjustment.

   What problems does Bill have as a result of moving from the farm community in which he has been raised to a larger city community?

4. Talking about and sharing one's problems with someone may be helpful in relieving feelings of frustration and anxiety.

   How does talking about his problems to the teacher affect Bill? How does Fred react to talking about his problems?

5. A teacher's encouragement to pupils to participate in class activities may help them to develop self-confidence.

   How does the teacher do this with Rodney?

6. Difficulties at home may affect a pupil's adjustment in class.

   How does Fred's anxiety over his mother's illness affect his classroom behavior?

7. Teachers must find out the causes of pupils' behavior problems in order to deal effectively with them. Punishment for misbehavior may often do more harm than good.

   How does the teacher deal with Fred's misbehavior? What happens as a result?

8. A student's failure to win social acceptance from the group may impair his learning in the classroom.

   How does Bill's acceptance by one of the students improve his learning?

9. The well adjusted child of today may be an adjustment problem tomorrow if confronted with difficult social or emotional problems.

   How does the film show this in the case of Fred?

10. Teachers who want to do a good job of teaching must understand children's needs and be ready to help them with their problems or difficulties.

    How does the film show this in relation to Bill, who needed social acceptance; Fred, who needed reassurance about his sick mother; and Rodney, who needed self-confidence.

11. Methods the teacher may use to get information about pupils' difficulties include after school conferences with pupils and visits to their homes.

    How does the teacher apply these two methods in the cases of Bill and Fred?

APPENDIX B

ELABORATION BY THE EXPERIMENTER ON THE PRINCIPLES LISTED WITH THE GUIDE QUESTIONS

PHYSICAL ASPECTS OF PUBERTY

1. There is a wide age range for the onset of puberty in boys and girls.

   We tend to think so much in terms of averages -- the average child does this at such and such an age, the average child becomes sexually mature at such and such an age -- that we are inclined to forget that there is a wide range of individual differences in the rates at which boys and girls develop. It is not unusual for an individual to become sexually mature several years earlier or later than the average for his sex.

2. Girls mature sexually at an earlier age than boys.

   On the average, girls reach sexual maturity earlier than boys. If you took a thousand boys and a thousand girls, you would be almost sure to find that the average age at which girls become sexually mature is earlier than the average age at which boys become sexually mature. You would probably find a considerable amount of overlapping. Some boys and some girls will mature earlier or be delayed in sexual maturation beyond most boys and girls.

3. Physiological changes may result in heightened irritability and nervousness in girls before and during menstruation.

   In the classroom and in other life situations some girls become tense and irritable just before and during their menstrual periods. This is not uncommon and something which we should be aware of and accept as a natural occurrence.

4. Adolescents with early sexual development may be interested in the opposite sex sooner than those adolescents with later sexual maturity.

Parents and others sometimes tend to feel that there is something unnatural or abnormal about the adolescent who displays an interest in the opposite sex at an earlier age than his peers. They may fail to realize that this behavior may be a normal manifestation of early sexual maturity.

5. Physical growth in size and strength during adolescence does not necessarily bring with it sexual maturity.

Some adolescents who are big and strong may not necessarily be sexually mature. Physical growth per se is not necessarily accompanied by the development of the gonads or sex organs.

6. Some of the effects of the physical changes of puberty on adolescents are restlessness, nervousness, and awkwardness.

During the process of sexual maturity, the adolescent is often clumsy and awkward. At this time adults may feel that the adolescent is close to being a mature man or woman and should be more graceful and skilled in his movements. Failure to understand that this awkwardness is often characteristic of adolescent development may result in misunderstanding on the part of adults.

7. Adults, with an understanding and sympathetic attitude toward the problems that the adolescent faces, can help the adolescent to avoid feelings of inadequacy.

In working with adolescents, who need understanding and patience, adults who are overly critical can make the adolescent feel inadequate. A sympathetic attitude on the part of the adult can help the adolescent avoid feelings of inadequacy.

8. Some of the physical changes which accompany puberty such as abdominal protuberance in girls, change of voice in boys, and skin blemishes in boys and girls may make adolescents overly sensitive and self-conscious.

We know that we can feel self-conscious if our clothes are different from others around us or if we have any skin irritations or blemishes. Certainly adolescents also feel self-conscious and more so than adults because appearance becomes especially important with the growing interest in the opposite sex.

9. The physical stresses and strains of adolescence may result in great fluctuations of appetite from day to day.

From our own experience we know there are times when we are hungrier than other times. The fluctuations in appetite that adolescents have may be even greater because of the rapid growth and stresses characteristic of adolescence.

10. Adolescents have a greater need for independence than young children; they tend to rebel against adult authority and restraints.

This rebellion against adult authority is something that often characterizes younger children too. It may be present to a greater degree in adolescents because they are closer to being mature men and women and many parents still tend to treat them as though they were younger children.

11. Normal adolescence is characterized by the need for increased physical and social activity.

Adolescents have a great need for dancing and other social and physical activities. However, it is sometimes hard for parents to accept this need for independent activity and association with their own age group. Parents sometimes fail to realize that this is a normal pattern of adolescent development.

SHYNESS

1. Sociometric tests are used in the classroom to discover which children are accepted by or are popular with their peers.

The sociogram is a sociometric technique which is used for studying the social structure of a group. It is useful for identifying the degree of acceptance or popularity of the members of a group.

2. In sociometric tests members of a group are asked to indicate their choices for companions in particular activities.

Sociograms are used not only with elementary school children, but also with high school and college students. They have also been used in industry and in the armed services. We can use a sociometric test in this class by asking each of you to select three students with whom you would like to work on a term paper or other class project.

3. Teachers should be concerned with the emotional and social development of their pupils as well as the teaching of subject matter.

The job of the school is not finished when pupils have acquired a certain amount of information about different subjects. It is equally important that the pupils be helped to get along well with others and to become useful members of society.

4. Shy children are not necessarily maladjusted or well adjusted.

After seeing this film, students may feel that shy children are maladjusted. However, this need not be the case. Some shy children may have serious personality problems while other shy children may be following a perfectly normal pattern of development.

5. For healthy social development, most children need participation in play activity with their peers.

The experience which children have in the give and take of play activity with children their own age, helps them to develop the ability to establish and maintain social relationships.

6. Continually setting standards too high for the child to live up to has a negative effect on the child's personality development.

Many people think that by setting standards too high for the child to attain, a child will work hard to meet these standards and become a better person. The effect of such a practice is more likely to make a child feel inadequate and insecure as he finds he is unable to meet these standards and feels that he is a failure.

7. Young children's behavior is motivated largely by the desire to win the love and approval of their parents.

The young child's world is centered around his parents and he has a strong need for their love and approval. Disapproval or rejection by parents is emotionally disturbing to the young child.

8. The child who fails repeatedly in his efforts to achieve his goal tends to give up trying rather than to try harder.

Many of us know that if we continue to fail in our efforts to achieve something we tend to become discouraged and give up after awhile. Yet Many of us as adults fail to realize that children especially need to have the success of accomplishment to keep from getting discouraged.

9. Shyness is a personality trait which is learned and may be changed.

Many people believe that you are born shy or born "social" and there is nothing that can be done about it. However, psychologists have found that shyness may be a result of early experiences. If shyness can develop from certain experiences, then it is possible to overcome shyness by giving the child other experiences.

10. One way in which a teacher may help a child to overcome feelings of inadequacy is to give the child a feeling of accomplishment.

Many of us know from our own experience that 'nothing succeeds like success' and achievement in some area can help the child to feel more competent as an individual.

11. Group situations in which children are encouraged to express and share their feelings can help individuals to overcome their fears.

Some of us have had the experience of discussing mutual fears or anxieties with our friends. Somehow, finding out that other people also have the same kind of fears and anxieties makes us realize that we are not alone and makes it easier for us to accept and overcome tham.

PROMOTING PUPIL ADJUSTMENT

1. Teachers should be concerned with individual differences in mental ability of pupils and differences in interests and background.

In order to deal effectively with people, it is important to know them. It is especially important for teachers to know their pupils as individuals, to know what their level of intellectual ability is, to use a knowledge of their interest as a point of departure for teaching subject matter, and to understand how the child's personality is influenced by his developmental background.

2. A pupil who feels rejected by the other pupils may fail to make any effort to win social acceptance.

Many of us know from our own experience that if we go to a gathering or social affair and we feel that people there are unfriendly to us, we may fail to make any effort to win acceptance. Our attitudes may be that if they don't want to be friendly, then why should we.

3. The change from one community to an entirely different community may cause the pupil difficulty in adjustment.

> The child may find it difficult when he moves from a community where he has been raised and has been accepted to a new community where he is strange.

4. Talking about and sharing one's problems with someone may be helpful in relieving feelings of frustration and anxiety.

> We know from our own experiences that when things have bothered us: merely talking about our problems to a sympathetic friend makes us feel better and may reduce feelings of frustration.

5. A teacher's encouragement to pupils to participate in class activities may help them to develop self-confidence.

> If one lacks confidence in his ability to certain things, doing these things successfully may help overcome this lack of confidence. By encouraging a pupil to participate in certain activities, the teacher may often help him to develop self-confidence.

6. Difficulties at home may affect a pupil's adjustment in class.

> We know from our own experience that when we are worried about personal problems or family matters, it is hard for us to give proper attention to our school work. Difficulties at home are likely to affect the pupil's performance in class.

7. Teachers must find out the causes of pupils' behavior problems in order to deal effectively with them. Punishment for misbehavior may often do more harm than good.

> In using punishment for misbehavior which may stem from frustration, anxiety or hostility, we are dealing with the symptom rather than the cause of misbehavior. In so doing, we also tend to make the child feel more resentful and hostile.

8. A student's failure to win social acceptance from the group may impair his learning in the classroom.

> Children are often motivated to do well in their class work in order to gain status with and approval by their peers. Lack of social acceptance may have a discouraging effect on a student's desire to learn.

9. The well adjusted child of today may be an adjustment problem tomorrow if confronted with difficult social or emotional problems.

> Very often we tend to think in terms of children being well adjusted or maladjusted. We fail to realize that even the well adjusted child may become an adjustment problem if confronted with serious problems with which he cannot cope.

10. Teachers who want to do a good job of teaching must understand children's needs and be ready to help them with their problems or difficulties.

> Many of us know from experience that we can't do our best in our college courses or on a job when we are troubled with personal problems. Sometimes teachers may fail to realize that children's personal problems and unfulfilled needs may also be detrimental to their functioning in school and in other situations.

11. Methods the teacher may use to get information about pupils' difficulties include after school conferences with pupils and visits to their homes.

> A pupil may not be ready to talk about his problems or difficulties in the classroom. Sometimes the pupil will talk more readily when he is alone with the teacher after class. The visit to the home may often provide the teacher with information about home environment and family relationships which could not be readily obtained from the pupil.

APPENDIX C

FILM INTRODUCTIONS

For Groups I and II

SHYNESS

Educators are no longer satisfied that their job is done when the child has learned or assimilated a certain amount of subject matter. In education today there is increasing emphasis on the child's wholesome personality development and social adjustment along with his intellectual growth.

This film points out some of the reasons for concern with the quiet shy children and indicates a method used in the classroom which helps to identify these children. Some of the causes of shyness in children are shown and it is pointed out too that in one case, shyness may represent a disturbance of normal social development; in another case, shyness may be a manifestation of a normal pattern of development.

This film gives meaning to the phrase that adult behavior patterns are often laid down in childhood. The film also helps to dispel the notion that shyness is an unchangeable personality trait.

PROMOTING PUPIL ADJUSTMENT

This film will take you into a high school classroom and show you how a teacher handled problems of pupil adjustment in her classroom and how she provided for her pupils' individual differences in mental ability, interests and home background. The problems this teacher was concerned with are the kind of problems all teachers may meet from time to time.

Two problems are given special emphasis in this film. One deals with the effect on a pupil of a change from a small farm community to a larger urban community; the other with the effect of anxiety about a family situation on the student's behavior in class. The film shows how the teacher's sympathetic understanding, patience, and tact play an important role in enabling her to find the cause of her pupil's difficulties.

As future teachers and or parents, you will find that the more you understand why children behave the way they do, the more effective you will be in your relations with them.

For Group III

SHYNESS

This film points out some of the reasons for concern with the quiet shy children and indicates a method used in the classroom which helps to identify these children. Some of the causes of shyness in children are shown. There will be two showings of this film, with a short break between showings.

PROMOTING PUPIL ADJUSTMENT

This film will take you into a high school classroom and show you how a teacher handled problems of pupil adjustment in her classroom, and how she provided for her pupils' individual differences in mental ability, interests and home background. The problems this teacher was concerned with are the kind of problems all teachers may meet from time to time.

APPENDIX D

FILM ACHIEVEMENT TEST

Psychology 303

Directions: This test is intended to measure your ability to apply the principles inherent in the three films that were shown to you.

Do not mark on this. Read each question carefully and decide which one of the answers is best. Then, on the separate answer sheet, make a heavy black mark in the appropriate space. Erase completely any answer you may wish to change. Answer all the questions. Guess, if you do not know the answer. Your score will be based on the number right.

"Physical Aspects of Puberty"

1. The film indicates that the normal age range of puberty for boys is (1) 10-13, (2) 12-16, (3) 11-14, (4) 9-16.

2. Discomfort and irritability during the first several menstruations are most frequently due to (1) social difficulties, (2) changes in blood pressure, (3) abnormal growth, (4) thyroid deficiency.

3. Twelve year old Mary, a happy and well adjusted child, suddenly exhibits an increased interest in boys. Her parents should (1) accept it as natural, (2) consider it amusing, (3) regard her as "boy crazy," (4) try to cure her by reasoning.

4. Mike and Johnny are both 13 years old. Mike is bigger and stronger than Johnny. The chances are that (1) Mike is sexually more mature than Johnny, (2) Johnny is as sexually mature as Mike, (3) both boys have reached sexual maturation or are close to it, (4) the boys may or may not be sexually mature.

5. Self-consciousness and concern about personal appearance during adolescence (1) affects girls only, (2) is of some, but little concern to boys, (3) is of considerable concern to both boys and girls, (4) is of little concern to both boys and girls.

6. The trend in adolescent development is toward (1) concentration on a few activities, (2) the establishment of one all-engrossing activity, (3) concentration on preadolescent activities, (4) an increasing variety of activities.

7. Nervous tension, according to the film on adolescence, is an aspect of (1) abnormal growth, (2) normal growth, (3) social maladjustment, (4) emotional instability.

8. Marty, a 14 year old adolescent, is constantly getting into difficulties because of his awkwardness. He has also been caught day dreaming a number of times. Which of the following is the least desirable course of action for his parents to follow? (1) ignore his behavior, (2) act sympathetically toward him, (3) ridicule his behavior, (4) encourage him in physical activities.

9. The best way for parents to handle the adolescent's impulse toward greater self-assertion in family matters is to (1) enforce stricter discipline, (2) permit complete freedom in family matters, (3) allow discussion only in minor matters, (4) encourage greater participation in family affairs.

10. The film indicates that, on the average, puberty begins in girls (1) at the same age as in boys, (2) about a year earlier than in boys, (3) about two years later than in boys, (4) about a year later than in boys.

11. Puberty refers to (1) disagreement with adult authority, (2) lack of self-confidence, (3) physiological change, (4) intellectual growth.

12. Which of the following physical changes accompanying puberty is least likely to cause self-consciousness? (1) skin blemishes, (2) changes of voice, (3) development of gonads, (4) abdominal protuberance.

13. Dick's mother is concerned over his extreme clumsiness. She believes that a 15 year old boy should have better muscular coordination. She discusses the matter with the boy's gym teacher. Which one of the following would the teacher be most likely to suggest? (1) His behavior is not unusual for his stage of development, (2) The boy should be made to pay for breakage of dishes, vases, etc., out of his allowance, (3) The boy should be referred to a psychiatrist, (4) An appeal should be made to the boy to exercise more care in the future.

14. Twelve year old Sarah exhibits as much interest in boys as does 15-year old Henrietta. Which of the following is the best statement? (1) There is something markedly wrong with Sarah. (2) Henrietta is normal but Sara is boy crazy. (3) Sarah should be warned of the evil consequences of her ways. (4) Sarah may be undergoing earlier sexual development than Henrietta.

15. Which of the following is least likely to accompany the early phases of menstruation in girls? (1) tension and nervousness, (2) emotional upset, (3) emotional stability, (4) change in blood pressure.

16. A boy who begins puberty at the age of eleven should be considered (1) precocious, (2) subnormal, (3) normal, (4) abnormal.

17. The need of the adolescent for increased physical activity is due in greatest measure to the (1) rapid growth of muscles, (2) ratio of bone growth to muscle growth, (3) secretions of the thymus gland, (4) interaction of the glandular system.

18. By scoffing at and belittling the adolescent, adults would most likely (1) make him more determined to achieve his goals, (2) cause him to feel inferior and insecure, (3) lead him into a life of juvenile delinquency, (4) give him strength of character.

19. Variation in appetite from day to day during adolescence is generally considered as (1) a normal state of affairs, (2) an abnormal state of affairs, (3) due to pituitary malfunctioning, (4) due to the rapid rate of bone growth.

20. If you took a hundred 14-year old boys and a hundred 14-year old girls at random, which of the following statements would most likely be true? (1) There is considerable overlapping, but the girls tend to be more mature. (2) Each boy is more sexually mature than each girl. (3) Each girl and each boy are of approximately equal sexual maturity. (4) Each girl is more sexually mature than each boy.

21. Susan's mother wants to help her as much as she possibly can during her adolescent years. Susan's mother should (1) caution her to stay away from heterosexual activities, (2) realize that the girl needs sympathetic understanding, (3) insist that she spend her evenings with her mother, (4) supervise her activities more closely.

22. Adults would do well to understand that adolescents, as compared to pre-adolescents, (1) need more adult supervision, (2) need more independence, (3) are less clumsy and restless, (4) are less variable in their moods.

23. Which of the following is directly related to sexual maturation? (1) increased muscular strength, (2) irritability and nervousness, (3) development of the gonads, (4) increased impulse toward independence from authority.

24. Mr. Morrison, a new general science teacher in the junior high school, is concerned about the behavior of four boys in his class. Which one of the following should he be most concerned with? (1) Fred, who constantly flirts with the girls, (2) Ben, who is moody and keeps to himself, (3) Jack, who is very sensitive about his pimply skin, (4) Mark, who is restless and fidgety.

"Shyness"

25. As a result of giving a number of sociometric tests to her class, the teacher finds that Mary was not chosen by any of the children, even though Mary has known the children in the group for several years. The teacher would be wise to interpret this to mean that Mary (1) is not popular with the class, (2) has an unfavorable home background, (3) is a problem child, (4) is disliked by the other children.

26. Michael, an 11-year old, has a great fear of ghosts. Which of the following is <u>most</u> likely to be effective in alleviating Michael's fears? (1) Tell Michael that his fears are groundless. (2) Point out to Michael that it is immature for an 11-year old to have such fears. (3) Encourage Michael to talk about his fears of ghosts when other children are talking about their fears. (4) Tell Michael's parents that is is not good for him and they should do something about it.

27. Ben is an excellent student who gets along satisfactorily with the other students. There is, however, an unpleasant home situation due largely to the fact that his father constantly belittles him and often punishes him unjustly. The teacher should (1) encourage Ben to talk about his family difficulties, (2) consider the school to have done all that it could be expected to do, (3) consider that family difficulties are not her concern, (4) indicate to Ben that he could get along with his father if he really tried.

28. Frank is a quiet boy who spends all his spare time collecting stamps. He does not participate in activities with the other students. The wisest inference that the teacher can make is that Frank (1) is well adjusted, (2) may be maladjusted, (3) shows definite signs of maladjustment, (4) appears normal.

29. A sociometric test is most likely to give some indication of an individual's (1) social intelligence, (2) socio-economic status, (3) social acceptance, (4) social prejudice.

30. A child will have confidence and ability to get along with others to the extent that he has (1) been shielded from unpleasant relations with other children, (2) learned to conform to the demands of his parents, (3) been thrown into very difficult situations, (4) interacted effectively with his peers.

31. Sam's father, a former college football player, wants his son to grow up to be a capable and confident athlete. He finds, however, that Sam makes many mistakes in football passing. Which of the following is the <u>least</u> desirable course of action for Sam's father? (1) Point out that Sam's mistakes are serious and must be corrected at once. (2) Overlook many of Sam's mistakes. (3) Encourage Sam to participate in a variety of sports. (4) Encourage Sam's interest in football in spite of his mistakes.

32. The parent can influence the child most through the use of (1) authority, (2) affection, (3) punishment, (4) rewards.

33. A child's constant failure tends to (1) get him to expend greater effort, (2) make him rebellious, (3) make him give up trying, (4) give him a more realistic view of himself.

34. Adequate social development of a child requires (1) a carefully organized program of reading, (2) special attention at each age level to teaching good manners, (3) extensive social contacts with children of his age level, (4) constant training at home to insure uniform behavior.

35. The main purpose of a sociometric test is to show (1) an accurate picture of the individual's social maturity, (2) the degree of a group's social prejudice, (3) differences in social class, (4) which individuals are accepted or are not accepted by a group.

36. Shyness is a trait which is (1) inherited, (2) unchangeable, (3) unpredictable, (4) learned.

37. Albert, although he is of above average intelligence, is very unsure of himself and he is hesitant to participate in a class project in general science. The teacher should (1) tell him that a boy of his intelligence should have more confidence, (2) tell him that he must force himself to work with the group, (3) find out what he can do well and encourage him to go ahead, (4) motivate him through threat of punishment.

38. Which of the following would be <u>most</u> effective in helping a child to overcome his fears? (1) encourage the child to express himself freely in a group situation, (2) shame the child, (3) scold or threaten the child, (4) force the child to meet the feared object or situation.

39. Maternal overprotection often is the cause for a child being (1) aggressive, (2) boisterous, (3) shy, (4) sullen.

40. Margaret is an attractive girl of slightly higher than average intelligence and ability. She does not participate in activities with other children and seems terribly afraid of making mistakes or saying the wrong thing. Margaret (1) shows signs of maladjustment, (2) appears reasonably well-adjusted, (3) may or may not be maladjusted, (4) is manifesting her inherent shyness.

41. A sociometric test is based on the statements that people make about an individual, relative to whether (1) they like or dislike particular activities, (2) they would like to do things with some individuals, (3) certain individuals are socially acceptable, (4) they like or dislike the personality of certain individuals.

42. Helen, who is of barely average mental ability, by dint of ceaseless study, generally gets one of the highest grades in the class.

It would be wise for the teacher to (1) congratulate Helen on her achievement, (2) observe Helen to see how she gets along with her peers, (3) leave Helen alone, (4) tell Helen that too much study can weaken the mind.

43. Parents with very high demands and standards for their children are most likely to help their children to (1) obtain greater social acceptance, (2) build fine characters, (3) feel more self-confident, (4) feel rejected and inadequate.

44. Jane, a four year old child, accidentally started a fire when left alone for a few minutes in the kitchen. She had tried to "cook some dinner for the family." The best explanation probably is that Jane (1) wanted to please her mother, (2) was just being naughty, (3) wanted to hurt her mother, (4) rebelled against adult authority.

45. Shyness is (1) an inborn, unchangeable trait, (2) easily overcome by a sympathetic person, (3) an indication of neurosis, (4) due largely to the effects of early experience.

46. Which of the following questions is <u>most</u> likely to be asked on a sociometric test? (1) Are you socially successful with your peers? (2) Which three pupils are most socially useful? (3) Which three pupils in your group are well mannered? (4) Which three pupils would you invite to a ballgame?

47. Allen has been failing continually in his efforts to solve some geometry problems. The wisest course of action for the teacher would be to (1) insist that he keep right on trying, (2) assign some problems that he is more likely to solve, (3) point out that perseverance leads to the development of good character, (4) indicate that other students have done the problems and that he can do them too.

48. A teacher may help a child to overcome feelings of inferiority by (1) explaining that he is as good as anybody else, (2) helping the child to do well in some socially desirable activity, (3) being very attentive to him in class, (4) forcing him into activities.

"Promoting Pupil Adjustment"

49. Teachers should (1) give all students the same assignment, (2) punish those who fall behind in their work, (3) demand the same amount of work from all students, (4) give the brighter pupils more difficult tasks than the duller pupils.

50. Since the beginning of the school term six weeks ago, Alice has failed to gain social acceptance by the students in the class. She feels that the other girls look down upon her and do not want to mingle with her. She is most likely to (1) try even harder to win group acceptance, (2) report the matter to the principal,

(3) give up trying to gain acceptance by the group, (4) tell the group that they are hurting themselves by their snobbishness.

51. Jane, who is attending a high school in a lower middle class residential center in Chicago, is having difficulties in getting along with the children in her class. Upon examining Jane's school record, the teacher found that she had moved to Chicago from a small town in Arkansas. It is most probable that Jane's difficulties in class are due to (1) some defect in Jane's personality, (2) Jane's deficiency in intellectual ability, (3) the move to a very different type of community, (4) her parents' failure to give her an adequate upbringing.

52. Jack feels very disappointed and unhappy about his failure to win a scholarship award which is given by the school to the best student each semester. The teacher should (1) tell him that he will surely win next term if he tries harder, (2) indicate to him that being a good loser is more important than winning, (3) point out to him that the award wasn't very important, (4) encourage him to talk about his disappointment.

53. Which of the following statements concerning self-confidence is <u>false</u>? (1) Some intelligent individuals may be lacking in self-confidence, (2) Self-confidence is an inborn characteristic which is little affected by experience. (3) The level of an individual's self-confidence may vary during his lifetime. (4) Early experiences may have considerable effect on the individual's level of self-confidence.

54. Myrna has been having a great deal of friction with her step-father. She cries a great deal and secretly confided to her best girl friend that she wishes her stepfather were dead. The teacher should realize that Myrna's difficulties (1) may affect her work in the classroom, (2) are a personal matter and not the concern of the teacher, (3) will have little effect on Myrna's work in class, (4) are due to Myrna's own selfishness and wickedness.

55. In dealing with a pupil's problem of adjustment, the teacher should (1) tell the pupil to try harder, (2) try to locate the source of the difficulty, (3) assume that the source of difficulty is in the home, (4) give the child a sociometric test.

56. A pupil's difficulties in getting along with his peers (1) are usually due to social class differences, (2) should be dealt with only by parents, (3) are not the concern of the teacher, (4) may interfere with classroom learning.

57. A child who is happy and well adjusted would most likely (1) continue to be happy and well adjusted in the face of even the worst difficulties, (2) become maladjusted if confronted with serious difficulties over a period of time, (3) demand that his parents allow him to do as he pleases, (4) become maladjusted when confronted with minor difficulties.

58. Which of the following is most desirable? A teacher who (1) is sympathetic to student's personal problems, (2) allows the children to do as they please, (3) is firm and unyielding, (4) is concerned only with teaching subject matter.

59. A teacher tries to identify the source of a pupil's adjustment problems, but is unsuccessful in getting information from him. She is most likely to get the desired information by (1) threats of punishment, (2) reporting the matter to the principal, (3) rebuking the pupil, (4) contacting the parents.

60. The teacher who desires to arouse a student's interest in a particular activity should begin with (1) her own interest in the activity, (2) an interest already possessed by the pupil, (3) activities suggested by the textbook, (4) determined efforts to make the child interested.

61. The best way for a teacher to deal with a pupil's frustrations and anxieties is to (1) give him good advice, (2) tell him that they are unimportant, (3) encourage him to talk about his difficulties, (4) advise him not to talk about his difficulties.

62. James is a bright and imaginative boy who is shy and hesitant to participate in classroom activities. The teacher should (1) realize that he is naturally shy and there is nothing that can be done, (2) encourage James when he shows signs of interest in participating, (3) point out to James that shyness may have unfavorable effects on his personality development, (4) indicate to him the foolishness of his failure to share his ideas with others.

63. A knowledge of the way high school students behave (1) has little bearing on teaching ability, (2) is necessary for efficient teaching, (3) is not the concern of the teacher, (4) is much more important than knowledge of subject matter.

64. When a student shows no interest in a subject the teacher should (1) give him a pep talk, (2) regard the loss of interest as the fundamental cause of poor work, (3) search for the reason for his lack of interest, (4) realize that she cannot hope to interest everybody.

65. A previously happy well adjusted pupil begins to misbehave in class. The teacher might best interpret this as an indication that he has (1) family difficulties, (2) financial difficulties, (3) a problem which the teacher has to identify, (4) difficulties in social adjustment.

66. The teacher who wishes to arouse a student's interest in reading would do well to (1) suggest reading materials in areas of interest to him, (2) compel him to read in front of the class, (3) give him additional reading assignments, (4) urge him to read the textbook assignments carefully.

67. Emotional disturbance over family matters is likely to (1) make the individual happier and better adjusted in the long run, (2) have a positive effect on the development of the pupil's character, (3) have some effect on the pupil's classroom work, (4) have more effect on dull pupils than on bright pupils.

68. If a teacher is greatly worried or unhappy, the teacher should (1) talk the problem over with him, (2) ignore this since such matters are not the concern of the teacher, (3) send him to a psychiatrist, (4) call the attention of the class to the pupil's problem.

69. When visiting a pupil's home, the teacher should (1) tell the parents of all the difficulties she has had with their child, (2) talk only of the child's positive accomplishments, (3) try to get information about the pupil, (4) relieve her own anxieties by talking about her classroom problems.

70. Pupils who continually disturb the work of the class should be (1) considered naturally mean, (2) punished for being disagreeable, (3) given some difficult assignments, (4) considered as possibly under emotional strain.

71. Which one of the following would be <u>most</u> likely to create problems of social adjustment? (1) socio-economic status, (2) being more intelligent than one's peers, (3) frequent changes of residence, (4) being taller than one's peers.

72. A pupil who is socially rejected by his peers is most likely to (1) gain in self-confidence, (2) give up trying to win group acceptance, (3) do more satisfactory school work, (4) develop psychotic symptoms.

VITA

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Candidate for the Degree of

Doctor of Education

Thesis: AN EXPERIMENTAL STUDY TO DETERMINE THE EFFECTS OF PROACTIVE SET, RETROACTIVE SET, AND LACK OF SET ON THE LEARNING WHICH RESULTS FROM THE PRESENTATION OF INSTRUCTIONAL FILMS.

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