A STUDY OF OUTCOMES
OF INSTRUCTION IN A PSYCHOLOGY CLASS
WITH SPECIAL REFERENCE TO TWO TEACHING METHODS

DISSERTATION

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JOHN PAUL SMITH, B.A.
The Ohio State University
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Approved by:

[Signature]
Adviser
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This paper is dedicated to those students who aspire to become competent and humane teachers, and who have taught me something about teaching.
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CHAPTER I
BACKGROUND OF THE PROBLEM AND OBJECTIVES OF THIS RESEARCH

Psychology was taught, under the name of "mental philosophy", in the first American normal school more than one hundred years ago. (6) ¹ It was a general requirement for certification by around 1900 (32), and is required for certification for teaching practically everywhere today. (11) (16)

Educational Psychology, in the professional curricula for the preparation of teachers, is depended upon to assist teachers perform various duties related to the care and education of children. According to the Dean of a Midwest school of Education, "Psychology is looked to for the development of the basic principles which should underlie and support the way in which the school deals with its human material." (48) Another writer notes that there is general agreement that Educational Psychology is central to the training of teachers. (16) Blair states unequivocally, "No one untrained in the methods of psychological diagnosis or unacquainted with the learning or adjustment processes of children can be qualified to engage in the activities required of teachers." (5) These comments could be duplicated many times over. Thus, there is general agreement on the essentiality of psychology for teacher preparation.

¹ Numbers in parentheses refer to bibliography citations.
With regard to the teaching of the course, however, there is no such agreement. Apparently all of the survey studies on this matter support a conclusion of extreme variability in such teaching practices as academic level at which the course is taught (with corresponding differences in certain student characteristics), prerequisites and corequisites, sequence, hours of credit, and so on. The great majority of courses in Psychology for Education are offered in departments of education (8), which have a number of different teacher-preparation programs. (33) (Besides taking note of the issue of "professional vs. general education", Monroe mentions several different programs or patterns in teacher education; the two-year upper division program, the four-year program, the additional fifth-year program, and so on. See (53), Chapter 12, "Teacher Education in Colleges and Universities"). The different programs of teacher-preparation add to the variability of practices in the teaching of psychology. Writers of textbooks also contribute to variability through their content emphasis.

One of the consequences of this variety is that an over-all evaluation of the influence of the course is extremely difficult if not impossible. Probably it is even

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1 For a sample of such studies, see Woody, 1920 (58) G. Watson, 1926 (55) Robinson, 1930 (42) Myers, 1935 (36) Blair and Hendrickson, 1950 (8) Symonds et al., 1952 (51) and Baller and Bruce, 1953 (3).
irrelevant to speak of "general values" of psychology in education. One must confine his appraisal of the course to specific situations, and as there is no general appraisal, local studies become almost mandatory. Appraisal of courses by the expert judgment of the instructor probably should be supplemented or confirmed by empirical investigations. This is especially true because of the present teacher shortage which, by causing urgent need for additional qualified teachers, has led to interest in a number of different proposals for teacher preparation. Evaluation of these several proposals will be necessary to establish the merits of each.

Local evaluations perform three important functions. The first of these is to direct attention to the actual outcomes of instruction—whatever they may or may not be. It should be noted that the actual, and not the presumed, outcomes are the subject of interest. Opinions and assertions regarding outcomes are often encountered in the published reports. Evidence to back up these assertions is rarely found except for the single outcome of knowledge of fact. At any rate, this is the only outcome for which the students are held accountable.

The manner in which students must demonstrate their knowledge, furthermore, is not one which would create lasting faith in the meaning and usefulness of this knowledge to the students. Essay examinations are, generally,
unreliable. An inquiry into the merits of the oral examination has shown that there is very little agreement among judges either as to the questions that were asked or in the answers regarded as acceptable. (5) Objective measures, which are the most economical and potentially extremely useful, tend to concentrate on points which can readily be written into test items of the true-false or multiple-choice type. It is not at all uncommon that such points are rather unimportant. These tests—which certainly direct study efforts—tend to train students who succeed chiefly in recognizing previously seen detail. It may be said, therefore, that even for the most commonly tested outcome the students’ learning may not be as complete as is desired. Local evaluations which point out the actual outcomes, including even a paucity of real educational benefits, are performing an important function.

The second function of evaluation is to emphasize the relationships of instructional activities to course outcomes. Some studies have been published on various activities. Many of these will be reviewed in a later chapter. Here it should suffice merely to point out some of the benefits of knowledge of relationships between activities and outcomes. If two instructional activities seem equally valuable, some simple measuring device will usually show that one is superior and it then can be appropriately emphasized. Less obvious, but certainly not impossible, is the situation in which some
instructional activity is so far from contributing constructively that it actually yields negative transfer. This may be entirely overlooked unless there is some attempt to measure the influence of each activity. Briefly, it would seem that good teaching may not be divorced from conscientious evaluation.

The third major function of evaluation is to find relationships between student traits and course outcomes. Information from several sources shows these relationships to be important. First, Differential Psychology leaves no room for questioning that people are remarkably diverse in their characteristics. Secondly, studies in remedial education point out that people learn via different sensory modalities, that an instructional activity which may be excellent for one student may be very poor for his classmate. Additionally, psychological researches, particularly in various kinds of learning activities, find it necessary to equate, match, or otherwise control for certain traits among their subjects. From all the above sources of information it appears that not all instructional activities are equally effective with all students.

Actually, the problem of relationships between student traits and course outcomes has two aspects of importance in the present discussion. First, what inter-individual and intra-individual differences influence responses to instructional activities? Secondly, what instructional activities are effective with a student of a given trait or profile of traits?
These are questions whose answers are not easily to be found, partly because the content of most disciplines is, and definitely should be, constantly changing, and partly because methods and tools for comprehensive evaluations are yet lacking. Neither of these is sufficient reason to avoid the attempt to evaluate, however, since the early attempts can eventually lead to highly successful evaluations. The first step is the identification of educationally significant traits.

Objectives of this Research Project

The objectives of this project are indicated by the functions of evaluation described in the previous pages. They are, first, to evaluate the effectiveness of Educational Psychology 407 in attaining some of its educational aims with students in teacher-preparation programs. This course is a five credit hour, required part of the so-called professional sequence of courses, and has Elementary General Psychology 401 as a prerequisite. Course aims which are of interest here are, first, mastery of subject-matter, secondly, promotion of favorable attitudes toward aspects of the course, and increase in the psychological sophistication with which these potential teachers view their future teaching duties and relationships with children.

The second major objective of this research project is to determine the influence of a specific instructional activity on the attainment of the above noted course aims. This
instructional activity is a series of lectures, given by a
senior member of the Department of Psychology of The Ohio
State University to one-half the students enrolled in Educa-
tional Psychology 407.

The third major objective of this project is to identify
traits among the students which are related to course outcomes.
From these, it might be possible in the future to determine the
relative effectiveness of different instructional activities
for students of various characteristics. Merely as an example,
it would be relatively easy to test the hypothesis that students
of high academic ability profit more from visual aids than stu-
dents of low ability.

A final objective of this research will be to draw con-
clusions which will be of importance for future research,
especially that kind of research which deals with patterns
of traits among the college students who are the subjects in
this project, and the relationships of these patterns to
course outcomes.

Students who are the subjects in this project will again
be contacted one year after initial data collection and asked
to mark some of the same measures. In this way some idea of
the stability of the course outcomes can be gained.

As a limitation on what can be done in this research pro-
ject, it must be remembered that the subjects are students en-
rolled in a course that is a part of their professional
preparation. It must be accepted that these students and their learning are the first obligation of the college. They can be used for research purposes where this will not interfere with their professional development. One important consideration in using the students as subjects is simply the amount of time which can be spared from regular class activities for research purposes.

A consequence of this important factor is that only a few instruments can be used for measuring outcomes. Obviously, an extremely comprehensive evaluation—test battery, situational tests, sociometrics, etc.—would require the use of a good deal of class time. As this was impossible, it was decided to attempt to evaluate for the few outcomes of greatest interest to the instructors and supervisor of the course, using only a small number of objective measures. These data can be analyzed differently for each of the major objectives of this project.
CHAPTER II

RESEARCH BEARING ON THE
TEACHING OF EDUCATIONAL PSYCHOLOGY

Researches in the teaching of psychology seem to fall quite readily into three categories. The projects which attempt to use the classroom situation as a setting for therapeutic or socialising efforts are intriguing. Also interesting are the comparisons of the so-called instructor-centered versus student-centered classes. Finally, there are research studies in which some particular instructional technique is evaluated. All three types of research have in common the aim of making the course more functional. And, while they all emphasize instructional procedures, it is recognized that procedures may not be disjoined from other aspects of a course.

**Therapeutic Classes**

Three very stimulating papers describe classroom teaching projects which were primarily therapeutic in aim and method. Asch (1) compared the "non-directive" teaching of one section with the "traditional lecture-discussion method" used in three control sections. All were taught by Asch, and all students were in the second of a two-semester sequence. The "non-directive" students were "free to choose their own goals" and were otherwise given great autonomy including the right
to decide their own grades. The instructor's role was described as that of a "non-directive counselor who helps to create the atmosphere for self-directive learning". Experimental subjects reportedly improved in general adjustment but were inferior in knowledge of subject-matter.

Faw has reported on a "psychotherapeutic method of teaching psychology". He taught three sections, one by non-directive techniques, one by the presumed antithesis, "instructor-centered" methods, and the third section using both methods in alternation. He too reports gains in adjustment, and intellectual growth as well. "The indications are that the intellectual growth of members in the therapeutic sections did not suffer but was enhanced somewhat by the relationship." (15)

What seems, possibly, to be a flaw in the research designs of both the Asch and Faw projects was that part of the evaluation was by written statement which had to be interpreted by the researcher. Presumably these statements were interpreted objectively, but some type of objective measure would have been a desirable supplement. Additionally, it is not clear whether the students' reports were collected before or after the termination of the course—which could be a biasing factor. In Asch's study, these student reactions are not clearly specified as anonymous, which they probably should have been.
The most adequate of the three therapeutically oriented projects from a standpoint of methodology is that of Winifred Horrocks. (23) She was able to continue a three-quarter study which provided exceptional opportunities for the collection of data. Her class was taught more or less as an activity-type class, using activity in a rather broad sense. For example, some group social affairs were considered to be a part of the pattern of instructional method. There was a good deal of within-group initiated and directed study of educational problems. As would be expected from a program so essentially central to the educational and also social experiences of a full academic year, marked changes were noted in the students' behavior and in their subject-matter competence. It would be difficult to duplicate this study except in situations where the class enrollment was small, probably not more than thirty or forty at the maximum. Very likely it would be impossible to keep a large number of students together without upsetting the registration of other students to an intolerable degree. This would be especially true in an institution which did not customarily offer its psychology courses in a full year sequence.

Student-Centered and Instructor-Centered Classes

McKeachie has recently reviewed several studies under this heading. (30) These two procedures may be distinguished, he
feels, by the source of class goals, instructor or students, and also by the methods of teaching. He goes on to say that the inconclusive results of several recent studies are due to the lack of control of relevant but heretofore unacknowledged variables. In this same journal, Guetskow, Kelly, and McKeachie have a report on "an experimental comparison of recitation, discussion, and tutorial methods in college teaching". In this experiment, all of 875 students enrolled in general elementary psychology shared the same lectures three times each week but met in groups of about 30 twice a week for exposure to one of the three instructional methods mentioned above. These small section meetings were taught by eight graduate students, all of whom taught one of each of the three kinds of classes. Results were inconclusive. (18)

One of the earlier studies on this problem was that of R. B. Spence in 1928, a comparison of lecture and class discussion. He used both instructional methods on both groups, reversing the procedures at the mid-point of the experimental period. No matter which came first, the lecture group was the better by the criterion of achievement. This superiority was statistically stable.¹ (49)

Barnard compared outcomes from a lecture given three times a week with outcomes of one lecture plus two hours of small-

¹ "Statistical stability" is the phraseology recommended by English, a change from the usage, "statistical significance".
group meetings. He followed the plan used by Spence of reversing procedures in the middle of the experimental period. Like Spence, he found that the lecture groups were superior on tests of achievement, but in this case the superiority was not statistically stable. (4)

Hartmann compared three lectures per week against two lectures plus a one-hour individual conference. Contrary to his expectations, the conference group, on achievement measures, did "more poorly". Their attitudes toward the course, however, were more favorable. Seemingly they felt that more had been done for them and that they had actually learned more. (20) This is an interesting conclusion. Paw found the same thing to be true of his groups. (15) It almost seems as though the lecture groups get more from the courses by way of tested knowledge but underestimate their accomplishments, while the discussion groups actually do not learn as much, as indicated by the achievement tests, but feel that they have accomplished more. If this should prove to be a consistent finding it would certainly be important in planning courses.

Husband (24) compared the efficacy of lectures given to groups of 200 with "lecture-discussion" used in classes averaging 50 to 55. The larger group lecture was "always superior" on achievement, but not at a statistically stable level.

Marcuse compared the "large group lecture with small
quiz section recitation" against "large group lecture with no
quiz section but much discussion encouraged". Evaluation was
by anonymous questionnaire and three responses were obtained,
student opinion, student participation, and lecturer reaction.
The group which had no quiz section but did have discussion en­
couraged was judged to be the better by all types of response.

(29) Here again, as with Hartmann and Faw, the students were
apparently pleased by the opportunity for participation.

A brief digression here may be fruitful. The statement
just above uses the phrase, "opportunity for participation".
It may be that this is a significant variable, that students
like to feel that individual attention is available if they
want it, but that it will not be thrust upon them if they
don't want it.

Eglash, in the most recent paper to be published, com­
pared a "no-lecture, instructor-directed discussion group" to
a "lecture group with discussion encouraged". There were no
differences in achievement, but, in support of the speculation
just above, the "lecture with discussion encouraged" group had
much higher morale. Evaluation of students' reactions was done
by means of the "Michigan State Teachers Evaluation Sheet",
a seven-item checklist. (14)

Gibb and Gibb (17) presented a paper at an American
Psychological Association symposium on the teaching of
psychology on the topic of "effects of use of participative
action groups", presumably some variant of the student-centered approach. The experimental groups had no "apparent loss of normal content acquisition" and made "significant gains in role flexibility, self-insight, leadership skills, likeability ratings, and group membership skills" as compared to other sections being taught by traditional methods. This paper is presented in abstract, and hence does not give complete information. There is no report as to the generality or specificity of these gains, and no indication as to how the experimenters knew all the students—at least 330 of them—well enough at the beginning of the term to make ratings of "role flexibility", etc. In this study it would have been necessary to know the students' status at the beginning of the term in order to be able to come to a conclusion of "significant gain".

Somewhat less assertive in its conclusions is a paper—again reported in abstract—by Smith and Johnson. (47) They used four matched groups of 16 sophomore students each. The students were matched on a democratic attitude scale and an achievement test. Two groups were taught by "democratic" methods, and the other two by, presumably, "autocratic" (lecture) methods. (Whap's comments on the identification of various so-called democratic and autocratic teaching methods make note of the fact that there is nothing democratic about forcing students to discuss if they prefer lectures. (57) This means that these conditions must be demonstrated and not just
asserted. Many lecturers would object to being called "autocratic" just because they lectured to students instead of coercing the students into discussing the topic. The whole of this value-loaded terminology might well be eschewed.) The students evaluated the course. "Democratic" groups combined had a greater range and somewhat more favorable over-all response to the course. Achievement, too, was better in the "democratic" groups, but the difference was not, apparently, statistically stable. The small groups used probably reduce the dependability of the results. On the other hand, some of the results may be attainable only in small groups.

Smeltzer (46) added some special features—increased objective quizzing with knowledge of progress, reviews for the poorer students, and definite attempts to raise standards of performance—to a presumably typical lecture-discussion class. In the experimental group the passing point was raised by one-fourth without reducing the number of students passing. The absolute increase was not given, but apparently quite a few students were saved from failing. It is not unlikely that special tutoring for the less able students would always save some of them for another term.

To summarize this section on "student-centered versus instructor-centered" instructional methods, the achievement of students in the "instructor-centered" classes was equal or superior to that of their equals who were taught by "student-
centered" methods. This seems to be a conclusive result despite the papers of Smith and Johnson, and Smeltzer. Students' reactions to the procedures, however, are variable, sometimes favoring one and sometimes the other. This would, perhaps, suggest that the instructional method is a less important determinant of reactions than some other variable such as the student's feeling of freedom to either accept or reject a more personal relationship with the instructor. On the other hand, it could be that these different reactions are due to the instructor's personality. It should probably be noted that the lectures, insofar as they were described in the published reports, were delivered for the purpose of presenting and clarifying textbook material. That is, the lectures were based on the text and were mainly explanatory or informational in nature.

**Special Instructional Activities**

There are many reports in the journals of empirical studies on the teaching of psychology by means of various guided activities. A common procedure is to appraise the students prior to, and following, the course. In this design, the student is usually his own control and the instructional activity is considered to be the independent variable. A sampling of these studies will be presented and a few will be discussed in some detail.
Bailer describes a two-semester course organized around some three dozen main concepts, utilizing a number of teaching techniques and especially depending on the "preparation, reading and discussion of a child study record" which is compiled over the course of the two semesters. (2) Rivlin considers the "year-long study of an ordinary child" a valuable experience. (41) Bailer and Bruce have surveyed the instructional practices of a number of institutions and find that a two-semester sequence with the same instructor and student planning of work and activities, or student managed group projects, or committee work, or some other provision for individualized work, and much professional contact with children are becoming more frequent. (3)

Horrock has described various activities at The Ohio State University, all of which are intended to provide opportunities for the application of what is learned. (22) Murphy has started her classes with the student making a self-study and with several individual conferences coming early in the semester. This aids in making the work more individualized. (35) Knight and Holdsworth (26) have discussed an "experience program" for the in-service training of teachers which makes use of school records, anecdotal reports, projective techniques, observations, creative activities of the child, and other sources of information and interpretation. This culminates in educational recommendations for each child studied. Zerfoss has noted the use of
field studies of children. Several persons have found it valuable to use students as resources in situations in which school children were not available, or in situations in which the material to be learned could be well demonstrated with college student subjects.

Two studies demonstrating the teaching of psychology by means of a very complete program of guided activities have recently been reported. Cannon and Skinner (10) attempted to "bridge the gap between precept and example". Six problem areas were selected and various activities were chosen to carry out the general goal, demonstration of the educational principles advocated. Among others, the following activities were highly rated by students: construction, administration and scoring of achievement tests, writing case studies, studying pupils' interests from autobiographies and reading choices, holding conferences with individual pupils, class discussions on specific, observed problems and their solutions, and text readings. An Educational Psychology class and a high school English class were subjects. Several different modes of evaluation assured that the students both knew, and could apply the subject-matter of the course.

The single most outstanding research report on the teaching of psychology is that of Klausmeier and Swanson. (25) Faculty members and graduate students in the Departments of Education and Psychology at Stanford University gave their assistance. Two
different groups of upper-division and graduate students at Stanford were the subjects. Central to this project was the assumption that "objectives can be operationally defined as teacher behavior". The objectives of this particular class, then, were to create specified behavior changes in the students. To illustrate, one major objective was to have students learn to adapt psychological principles of learning to individuals and groups. Educational experiences leading to competence in this area included observations and demonstrations of various kinds, films, readings, special resource speakers, and large and small group discussions. These experiences were organized for the purpose of giving wide generality to psychological concepts, and were preliminary to actual attempts to teach classmates in accordance with these principles of learning. An additional group project was the planning of learning experiences suitable for a typical classroom. It may be seen that this was a project of considerable magnitude.

Much less comprehensive than any of the above reports of activities but interesting because they describe minor activities which can easily be carried out are reports by Coleman (12) on role-playing, Hertsberg (21), Ross and Henry (43), and Terry (52), on testing, and G. Watson (56) on types of illustration.

To summarize, three different types of researches have been discussed briefly. Experimental classes taught for
therapeutic ends (including social development) were apparently successful in attaining these ends with, presumably, an acceptable degree of subject-matter learning as a second major gain. However, two of the studies were criticized on a methodological basis, and the third, that of Dr. Winifred Horrocks, could not actually be repeated in any class having a large enrollment.

One lesson that may be drawn from these studies is that the students' personal responses should be collected anonymously and objectively. This is desirable both for increased accuracy or response and ease of scoring.

The second group of studies compares two or more methods of instruction in terms of their ability to produce two different behaviors, subject-matter achievement test performance, and attitude responses. In these studies, all relevant variables except the teaching method are supposed to be cancelled out or be rendered inoperative or to be made randomly operative so that there will be no systematic bias. One conclusion of considerable importance to be drawn from these studies is that it is necessary to get measures of the students' traits as they enter the course. This is essential to either pre-experimental matching or demonstration of equality of students who will be offered different experimental conditions.

The last group of papers deals with the influence of one or more instructional activities, and includes two very exceptional reports. The investigations of Cannon and Skinner (10) and of
Klausmeier and Swanson (25) both had able, advanced students as subjects and both required the aid of several faculty members and graduate students. Both indicate unequivocally that educationally significant changes may be effected in advanced students in a short time. However, it will be difficult for colleges to follow through on these studies simply because they were so thoroughly done. At a large institution, one which holds classes for several hundred lower-division students each year, it would be exceedingly difficult to put most of their recommendations into effect.

The other reports present interesting possibilities for increasing the transfer value of the subject-matter. It is interesting that these reports deal with activities exclusively, and that all the reports other than those on the use of the lecture give a prominent place to some sort of overt behavior. In nearly all instances the students were required to do something. In many cases, providing the opportunity to take part in the indicated activity was very difficult. At a large institution many activities involving the use of children as subjects could not be allowed because of the disruption of the normal educational routine and consequent damage to children. At least, this would probably be said.

Two generalized criticisms of all these studies are offered. First, nobody has published a follow-up study. Secondly, it is inconceivable that all these teaching devices are equally effective with all students. Some, obviously, must be better
with some students than with others. The question changes from "What is the best method for purpose A?" to, "What is the best method for purpose A with student a, and b, and c?" In other words, student characteristics must be related to outcomes and to instructional techniques.
CHAPTER III
PROCEDURES, SCOPE AND MEASURING
DEVICES USED IN THIS RESEARCH

The procedures were chosen by reference to two sets of conditions, the need to discharge obligations to the students, and the objectives of this research. The former is, of course, a limiting condition on the latter. Objectives are, first, to make a general evaluation of the course, secondly, to evaluate the influence of a lecture series, and, thirdly, to attempt to relate course outcomes to students' status on various traits. It was also hoped that some useful ideas for further research regarding relationships of patterns of student traits to course outcomes could be gained.

Subjects

Students in Educational Psychology 407 were the subjects in this research. Insofar as possible, procedures were made a part of the instructional activities of this course. There were six sections of approximately thirty students each, 178 in all. They were all regularly enrolled students in the College of Education of The Ohio State University during the Winter Quarter, 1953.

The six sections of students were taught by three instructors, including the writer, with each instructor teaching two of the six sections. All instructors shared responsibility
for carrying out parts of this project, for following the same
general course syllabus, and for pacing class work in order to
keep in step with the other instructors for the entire quarter
during which this project was carried on.

General Procedures

At the beginning of the quarter, the six sections of students
were administered the several pre-tests, which, by comparison with
the same tests re-administered at the end of the quarter, were to
provide for the first objective, general course evaluation. In
this situation the experiences of a quarter's enrollment in Educa­
tional Psychology 407 are considered as "interpolated" between
pre-test and post-test measures. This is a familiar design with
the students acting as their own controls. Because of inability
to enlist students' aid during final examination week, the post­
tests were given during the last week of the quarter. Whatever
the influence of the experiences of the examination week, there
is here no way of estimating it, and to this extent this project
falls short of getting a complete course evaluation.

The second main objective of this research project was to
evaluate a specific teaching activity, a lecture series. This
necessitated provision to equate the lecture and non-lecture stu­
dents on any variables which might differentially influence per­
formance on criterion measures. These data are in addition to
the materials and data required for the first objective. The
process of equating groups was a somewhat loose procedure since it was not known just what traits did influence performance on the criterion measures to be used.

Students could not be individually matched or equated on relevant variables by shifting them around from one section to another. It would be possible to achieve equality of groups by the expedient of eliminating odd cases who contributed heavily to differences in mean scores and variability. Fortunately, this was not necessary. No differences were found between groups when information regarding students' academic aptitude and achievement was studied. (There was no information on other characteristics. Academic aptitude was judged by score on the Ohio State Psychological Examination (53) as given in the "Report of Test Percentiles" published by the Occupational Opportunities Service at The Ohio State University. Students' reports were used for cumulative point-hour ratio.) Additional information on the homogeneity of the several groups is offered by scores on the various pre-tests. On one measure only, attitudes, one section was superior to the others. There were no other differences. Since one of the purposes was to compare each group with itself it did not seem necessary to eliminate students from this one section. It would be possible, in other words, to make a comparison of lecture versus non-lecture groups by comparing mean gains of the groups rather than mean scores of the groups. This would require either matched, or equated, or
random distribution of the factors which influence gain scores. As mentioned, equality of many variables, probably the major ones, related to achievement and aptitude is demonstrable.

One other possibly biasing factor remained to be dealt with, the influence of a specific instructor. This was settled, so to speak, by letting each instructor be his own control. Each instructor took one of the lecture and one of the non-lecture groups. Mean gains could therefore be compared for total lecture and total non-lecture without control for the instructor, and additionally for each pair of sections having the same instructor. So long as the instructor attempted to present a standard stimulus in both his sections (actually, of course, this could not be done, but advantages and disadvantages were probably equally often evident in both sections), and with comparable talent in both sections, any differences in attainment could with some justice be attributed to the lecture.

The third objective of this research, relating outcomes to student traits, required no special arrangements in the various sections. Here the intent was to find variables within the students which seemed to be related to course outcomes. Since the emphasis was on presumably enduring characteristics of the students, external factors such as the hour of enrollment and even the instructor were thought to be unimportant. Disregarding the instructor for this purpose may be somewhat extreme. However, one important source of instructor variability is reduced by the
necessity of having topics presented in the same order so that all students may be graded on the same basis. Having a common syllabus is routine in this class. The search for relationships, other than between academic aptitude and course grade, was to be frankly exploratory because course outcomes other than grade are so often overlooked. Part of this research project is finding the outcomes, and this must be done before any relationships can be shown.

The large number of possible combinations of various traits with various outcomes—potentially, practically unlimited—made some simple method of finding relationships mandatory. It was decided that all data should be coded and punched into I. B. M. cards. By sorting these cards, all comparisons could be made by the method of Chi-Square. Such comparisons would actually be tests of hypotheses either of association between two sets of scores or other measures, or of no association. For example, it would be predicted that there would be a direct relationship between grades and academic aptitude test scores, but there would be no expectation for relationships of any kind between achievement and personality or temperament variables.

The procedures may be summarized as follows.

To determine general outcomes of the course:

Pre-tests; course experiences; post-tests;

Test for stability of differences between mean scores including all students without regard to other factors.
To determine the influence of the lecture series:

Lecture group  pre-tests; lectures; post-tests;
Non-lecture group  "  "  no lecture;  "  "

Groups are equated for achievement to begin the quarter. At the end of the quarter, tests for stability of differences between mean scores, and for stability of differences in amount of gain in total groups and individual sections. A check on the influence of the instructor may be had by comparing each instructor's two groups, one a lecture and the other a non-lecture group.

To relate outcomes to student characteristics:

Disregarding all factors except the trait under consideration, students are divided into high, average, and low groups. By the method of Chi-Square, comparisons are made with other traits and with course outcomes to determine association or absence of association of traits and outcomes.

Additionally, an endeavor would be made to enlist assistance of students remaining in the College of Education one year after collection of the above data. At the least, the permanence of some measured outcomes might be determined.

Measuring Devices Used in This Project

The measuring devices include a content or achievement test of the subject-matter of Educational Psychology 407, a personality inventory, an attitudes measure, and a self-analysis instrument for teachers. Other sources of data include the scholastic records of the students in the form of cumulative point-hour ratio, grade earned in Educational Psychology 407, and the Ohio State Psychological Examination, a measure of academic aptitude. (53)

Copies of all measuring instruments will be appended.
Achievement Test. This measure was a 100-item objective test composed of about 70 multiple-choice and 30 true-false items. The latter were included in order to increase the length of the test, for the length of the class period necessarily put a limit on the number of items which might be included. Items were all taken from the same source, the text used in the course. (40) It was hoped that items would be of a quasi-reasoning as well as simply of the fact-recognition variety, and they were written to attain that end. The writer, who had had much experience constructing this type of test for this class, was confident that it would suffice to show changes and that these changes would be consistent with known facts about the students such as their previous academic attainments and their tested academic aptitude.

Guilford-Zimmerman Temperament Survey. This instrument is a newer development based on four older measures. Like them, it was constructed by the method of factor analysis. According to the authors it is useful "to obtain comprehensive pictures of individual personalities". (19) The Temperament Survey is composed of ten sub-tests. "...each score is probably a fairly clear indicator of one unique trait..." Utility "of the trait concepts has been amply demonstrated in their clinical applications and in vocational counseling and placement". Several reviewers, Stephenson, Van Steenberg, and Shaffer are quoted in Buros (9) and support the contentions of the Survey's authors.
This research project is concerned with four of these sub-tests of the Guilford-Zimmerman Temperament Survey. The first of these is **sociability**. The authors state, "This score should be useful in vocational and personnel counseling whenever the trait of social participation is a consideration. The high and low scores indicate the contrast between the person who is at ease with others, enjoys their company and readily establishes intimate rapport, versus the withdrawn, reserved person who is hard to get to know." (19) It is one of the general objectives of the College of Education that its students should be of the former, rather than the latter type described above. While such an outright dichotomy is probably an exaggeration—at any rate, "pure" types are seldom encountered—still it is fair to say that sociability is to be preferred to shyness or exclusiveness among those who are going to be teachers. From this it follows that any course taken by the students should contribute to sociability, or at least, should not aggravate exclusiveness or shyness. Educational Psychology 407 operates as a socialized, discussion type of class, and therefore can reasonably be expected to maintain sociability. It is also hoped that some relationships between the trait measured by this sub-test (and the other sub-tests as well) and course outcomes will be found.

The second of the Temperament Survey sub-tests of interest in this research project is **friendliness**. According to the authors, "A high score may mean lack of fighting tendencies
to the point of pacifism, or it may mean a healthy, realistic handling of frustrations and injuries. It may also mean an urge to please others; a desire to be liked." All of these traits—and they do seem to be several distinct traits, although the authors do not commit themselves on this point—seem to be appropriate in those who are to be teachers. While it is improbable that a one-quarter course would do much to change any really basic traits among the students, it should not depress the students either. Our main concern in any case is with the relationships of these traits to other measures.

A third sub-test is **Personal Relations**. The authors say, "Of all the scores, this one has consistently correlated highest with all criteria involving human relations. A high score means tolerance and understanding of other people and their human weaknesses. A low score indicates faultfinding and criticalness of other people and institutions generally." Again, the interest in this trait is with its relationships with other measures.

The final part of the Temperament Survey that is of interest to this research is the sub-test for **Masculinity-Femininity**. Several interesting hypotheses are presented by the authors of the Temperament Survey relative to traits measured by this sub-test. The present interest, again, is in determining whether differential performance is associated with other characteristics.

**Student Reaction Survey.** The third measuring device is an objectively scored student reaction test of 25 five-choice
multiple-choice items. It was constructed for the purpose of quantifying student attitudes toward certain aspects of Educational Psychology 407, but is easily adaptable to any course in Education. Provision of an objective type of attitudes measure may be more acceptable in some respects than collecting and interpreting the written statements of students, as has been done in other studies. (1) (15) The items included in the Student Reaction Survey include eleven on the extent to which Educational Psychology 407 provides educational experiences applicable to teaching, seven items on the general value of the course, four items on instructional practices, and one each on objectives, on use of the lecture, and on the instructor.

This measure was developed as follows. To get realistic verbal statements of attitudes, a preliminary test of the incomplete sentences type was given to students in the course during the school year 1951-1952. In this type of test, the first word or phrase of a sentence, called a stem, is the stimulus for the subject who completes the sentence as he wishes. Such responses are thought to indicate attitudes toward the subject of the stem. Approximately 60 stems, similar to the examples given below, were administered during the three quarters preceding the quarter in which this project was carried out. Examples are:

a. Psychology 407...
b. The Psychology 407 instructor...
c. The best feature of Psychology 407...
d. Group discussions in Psychology 407...

Students responded to this type of open-ended stimulus and handed
in their papers without giving their names. A minimum of 40 responses were collected for each stem. From these, 15 responses were selected for each stem for the purpose of expressing a range of attitudes from very favorable to very unfavorable toward the subject of the stem. Selection of 15 responses was made in order that equivalent forms might be derived.

Following the initial selection, the responses were typed onto 3 x 5 cards and given to judges with instructions to sort the cards into five response categories, very favorable, mildly favorable, neutral, mildly unfavorable, and very unfavorable. No attempt was made to keep an equal "psychological distance" between categories or to insure that the most favorable response to one item was psychologically equal to the most favorable response to the others, although this seems in general to have occurred. The sole requirement was that the alternatives in any one response category for each stem should be distinguishable from the other alternatives for the same stem.

Two forms of the Survey were desired. One way to provide them is to use the same stems with different responses. Hence, there are two problems, ensuring that the five alternatives to each stem do in fact provide five different response categories, and, ensuring that each alternative response to each stem in one form has a peer—according to judges—in the other form. With complete agreement on both requirements, five judges were thought to be enough to establish acceptability. (The judges were graduate
students who either were teaching or had taught Educational Psychology 407, or who were otherwise familiar with the course and advanced in their studies. Criteria for acceptability of items were selected by the pro-tem adviser.) Sixteen items met the criterion of perfect judge agreement. If only one judge disagreed with the others on one alternative of an item it was still accepted if another, additional judge would be found to agree with the others. Nine items met this criterion. Student responses were quoted verbatim since it was thought that this would yield a higher degree of face validity and make the items more interesting.

When items had been accepted the alternatives were randomly assigned positions. Thus the neutral response might occur first in one item, the mildly favorable first in another, or the very unfavorable in another. The final forms were mimeographed for administration. The following are quoted from Form II.

4. Psych. 407 should
   a. be more realistic and enthusiastic.
   b. be required of more students, even those who are not in the teaching field.
   c. be applied by teachers.
   d. be dropped from the curriculum.
   e. probably be somewhat useful to future teachers.

19. In relation to real teaching, Psych. 407
   a. is one of the best courses for that field.
   b. will very likely be forgotten by the time I'm going to teach.
   c. deals with some teaching problems but only superficially.
   d. helps you to realize some problems which will be facing you.
   e. is of value for some things, but not for others.
Scores are derived by arbitrarily weighting the several alternatives with the most favorable response being given five points and the least favorable, one point. Reliability of the instrument was determined by administering the two forms to Educational Psychology 407 students during the fall quarter of 1952. Pearson product-moment correlations were computed from these scores. There are different numbers of cases in each group because different sections of students were used. Table 1 presents retest reliability data for each of the two forms, and alternate form reliability also.

Table 1
Reliability correlations for Forms I and II of the Student Reaction Survey.

<table>
<thead>
<tr>
<th>Test Form</th>
<th>Number of Cases</th>
<th>Time Type</th>
<th>Interval</th>
<th>r</th>
<th>( \sqrt{r} )</th>
</tr>
</thead>
<tbody>
<tr>
<td>I</td>
<td>59</td>
<td>re-test 3 days</td>
<td>.83</td>
<td>.041</td>
<td></td>
</tr>
<tr>
<td>II</td>
<td>49</td>
<td>re-test 4 days</td>
<td>.85</td>
<td>.040</td>
<td></td>
</tr>
<tr>
<td>I x II</td>
<td>56</td>
<td>alternate none</td>
<td>.83</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Reliability of the device is adequate as judged by current practice. (31) The two forms make possible an alternate testing usually thought to be desirable to avoid any influence of familiarity with the test. This is particularly desirable since it may be said that marking given answers constitutes a learning trial which would tend to dispose students to mark the same answers in the future.

Alternate forms of a measuring device may have satisfactory reliability but one form may yield much higher scores.
than the other. For easy comparability, the two forms should yield scores that are equivalent. Table 2 gives statistical data for the two forms of this instrument.

Table 2
Descriptive Statistics for the Student Reaction Survey.

<table>
<thead>
<tr>
<th>Test Form Number of Cases</th>
<th>Mean</th>
<th>$\sigma$</th>
<th>$\sigma_{w}$</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>I</td>
<td>169</td>
<td>90.96</td>
<td>12.70</td>
<td>.98</td>
</tr>
<tr>
<td>II</td>
<td>145</td>
<td>91.43</td>
<td>13.11</td>
<td>1.09</td>
</tr>
</tbody>
</table>

Slight differences are evident between these mean scores. It is important to find out if these differences are real. That is, would they be expected to occur again and again? The critical ratio for the mean difference is .758. Usually, a critical ratio of close to 3.00 is required before the difference is accepted as a true or real difference and not merely due to chance factors. (31) It may be seen that the two forms are comparable.

Teachers' Self-Analysis Checklist. Of the instruments used in this project, this one is probably of the greatest potential importance for giving information about students in education courses. Parts I and II only were used. Part I is named by its authors "Teaching Satisfactions", and described as follows. "This category consists of 100 statements (two were left unscored because of difficulty of interpretation) setting up situations which every teacher must deal with in the course of school procedure and in which he is forced to make a choice, express an
opinion, or indicate an attitude." As an outcome of marking
the Checklist, "...the teacher will be able to determine whether
he likes or dislikes, and to what extent, the situations which
confront him in his teaching activities." (44) These "Teaching
Satisfactions" statements will be referred to collectively as
"Liking".

On Part I of this device, the subject makes three responses
to each of the statements. The first of these, as indicated
above, is "liking" for teaching activities. The second re-
response which must be made is a prediction, in the case of stu-
dents, of the ultimate adequacy with which these teaching
activities—whether liked or disliked—will be carried out.
The third response is the subject's estimate of the importance
of the stated activity. The following three items from Part I
are quoted for illustration.

8. "To avoid sarcasm or 'talking down' in your relations
   with children.

49. "To interpret intelligence test scores."

95. "To analyze the suggestions of children in an effort
to learn more about their interests."

To all these items the student makes three responses, liking,
adequacy, and importance. The first response is made on a
five-point scale from "like very much" to "dislike very much".
The second and third responses are made on a three-point scale.

The second sub-test of the Checklist to be used in this
study is Part II, "Relationships with Students". According
to the authors, "This section should reveal to the teacher
whether he acts in an understanding manner toward his pupils,
whether he has any real interest in children and derives satis-
faction and enjoyment from association with them, and whether he
is able to obtain a friendly and frank responsiveness from his
students." There are 50 items in Part II, and two responses,
frequency and importance, are made on a four-point scale to
each item. Subjects respond with either an indication of the
frequency with which they would perform each of the stipulated
activities or the frequency with which they would feel in agree-
ment with the given attitude or behavior. They also indicate the
importance of the given behavior or attitude. The following items
are taken from Part II of the Checklist.

5. Do your pupils cooperate with you in planning and working?

28. Do you differentiate between mischief and problem beh-
avior?

45. Do your pupils volunteer to assist with classroom
duties?

This instrument is a self-rating device which is intended
primarily to help teachers in their in-service professional
training. (44) However, in the content of the items included
it is particularly well adapted to registering shifts in stu-
dents' ideas and opinions about their work. It is, of course,
an objective of Educational Psychology 407 that an enduring
change will occur in the students' appreciations of teaching
duties and relationships with children, and that this change
could be described by some such phrase as "increased psychological sophistication". The Teachers' Self-Analysis Checklist should help to determine whether this change in appreciation is at least begun.
CHAPTER IV
FINDINGS

This chapter presents a discussion of the findings of the study and some of their implications for the teaching of Educational Psychology 407.

General Outcomes.

Gain in Knowledge. This is a usual objective, and the degree of its attainment is ordinarily estimated from some sort of an achievement test. It is usual to assume that the test items are representative of a larger population of items, and hence that the test measures the approximate level of understanding of a general body of material as well as the specific items included.

In this project, gain in knowledge was measured by means of a 100-item objective test made up of about 50 true-false items and 70 multiple-choice items. The test was given at the beginning and again at the end of the quarter. Table 3 presents data on these tests.

Table 3
Gain in Achievement Test Scores From the Beginning to the End of the Quarter.

<table>
<thead>
<tr>
<th>Time Given</th>
<th>Number of Cases</th>
<th>Mean</th>
<th>( \Delta )</th>
<th>( \Delta_1 )</th>
<th>Diff. Stability</th>
</tr>
</thead>
<tbody>
<tr>
<td>Beginning of Quarter</td>
<td>178</td>
<td>50.49</td>
<td>7.59</td>
<td>.57</td>
<td></td>
</tr>
<tr>
<td>End of Quarter</td>
<td>178</td>
<td>66.72</td>
<td>10.34</td>
<td>.78</td>
<td>16.23</td>
</tr>
</tbody>
</table>

41
From Table 5 it may be seen that a stable gain took place. It is reasonable to believe that this gain is related to course work. Other data, not given in the table, are relevant to the teaching of the course. The pre-test range was from 37-75. A chance score would be approximately 29. The less able students apparently had some knowledge when they came into the course. More striking, however, the most able students performed better on the pre-test than the majority did at the end of the course. The same wide range of competence has been observed by Worcester, Learned and Wood, and Lynch. It seems somewhat unreasonable that the able students should be required to take this class, or, if it must be required, that they should have to study the same topics as the less able students.

Evidence for the adequacy of the test may be deduced from the following facts. First, complete test security was maintained. Secondly, test items were written on the total quarter's work and included a wide range of material. Evidence of validity is given by finding expected relationships between the achievement test performance and grade in Psychology 407, cumulative point-hour ratio, and a test of academic aptitude, the Ohio State Psychological Examination. Chi-Square tests indicate that the obtained relationships would be obtained merely by chance not more than one time in one thousand. Reliability is indicated by a product-moment correlation of .724 found for a sample of 30 pre-test and post-test scores. This was
supported by a Chi-Square test for association between pre-test and post-test scores. Probability that the obtained association might have occurred merely by chance was less than one in one thousand.

**Attitude Change.** A second major objective of Educational Psychology 407 is the promotion of favorable attitudes toward the course and its subject-matter. This is based upon the belief that such a favorable attitude will increase the probability of psychological knowledge being wisely used in the teaching of children. The attitudes of the students were measured at the beginning and end of the quarter by the Student Reaction Survey. Table 4 compares the scores for these two testings.

**Table 4**

Gain in Attitude Test Scores From the Beginning to the End of the Quarter.

<table>
<thead>
<tr>
<th>Time Given</th>
<th>Number of Cases</th>
<th>Mean</th>
<th>Std. Dev</th>
<th>Diff.</th>
<th>Stability</th>
</tr>
</thead>
<tbody>
<tr>
<td>Beginning of Quarter</td>
<td>178</td>
<td>95.30</td>
<td>14.17</td>
<td>1.06</td>
<td></td>
</tr>
<tr>
<td>End of Quarter</td>
<td>178</td>
<td>95.52</td>
<td>15.30</td>
<td>.98</td>
<td>.22</td>
</tr>
</tbody>
</table>

Table 4 shows that the gain does not even approach the level usually required for a conclusion of statistical stability. It is obvious that Educational Psychology 407 failed to make any improvement that is measurable by the criterion instrument.

This instructional failure is not as embarrassing as it might be because the scores on the Student Reaction Survey were actually
quite high to begin with. Nonetheless it is odd that there there was no gain. Attempts to find the reason or reasons are rather speculative, but it seems that the fault probably lies with instructor failure to recognize attitude change as an important goal. It is commonplace that, if objectives are to be attained, there must be teaching directed to that end. Attitudes, as an objective, apparently did not loom very large in the vision of the course instructors. Certainly there were no activities specifically directed toward this objective, and very likely there should have been, if gain was to be obtained. Gains did occur in equally intangible characteristics which did have teaching activities directed toward, or related to them. This is shown by data to be presented shortly.

**Change in Conceptions of Teaching.** Included in the course objectives of Educational Psychology 407, and possibly the most important, is a desire to promote among the students an increase in their willingness and ability to view teaching duties and relationships with children as a psychologist might desirably view them. While it is unreasonable to expect to do a great deal in one quarter, a modest contribution should be possible.

Students entering Educational Psychology 407 filled out Parts I and II of the Teachers' Self-Analysis Checklist. These measures are described by the authors as potentially valuable in discriminating between effective and ineffective or undesirable teachers. In Part I there are 100 short descriptive statements
about common teaching activities. Persons marking the Checklist make three responses to each statement. They indicate, first, liking, secondly, estimated adequacy, and thirdly, the importance of the teaching activity. Part II presents 50 statements related to teachers' attitudes toward pupils. Respondents mark, first, estimated frequency of actually doing the thing indicated in the statement or agreeing with the attitude expressed by the statement, and secondly, the estimated importance of the given behavior or attitude. (44) Table 5 gives the data for this measure.

Table 5

<table>
<thead>
<tr>
<th>Sub-test</th>
<th>Mean Gain</th>
<th>Statistical Stability</th>
</tr>
</thead>
<tbody>
<tr>
<td>Part I Liking</td>
<td>15.58</td>
<td>.0001</td>
</tr>
<tr>
<td>Adequacy</td>
<td>14.59</td>
<td>.0001</td>
</tr>
<tr>
<td>Importance</td>
<td>12.48</td>
<td>.0001</td>
</tr>
<tr>
<td>Part II Frequency</td>
<td>7.36</td>
<td>.0001</td>
</tr>
<tr>
<td>Importance</td>
<td>7.09</td>
<td>.0001</td>
</tr>
</tbody>
</table>

The above tablo shows that for each sub-measure, a mean score difference as great as the obtained difference would scarcely occur by chance once in ten thousand trials. In other words, the obtained gains are almost certainly real gains.

Three instructional activities would seem to be related to this outcome. First, a series of three prepared case studies are brought to the class for diagnosis and remedial suggestions. Several periods are given to these with the emphasis on understanding behavior. These periods probably contribute more to
willingness to try to understand behavior than they contribute to ability to do so. Ability, unfortunately, isn't to be gained so easily. A number of items on the Checklist seem to be related to psychological interpretations of behavior.

The second class activity is a paper in which students give instances of constructive and destructive behavior by some teacher of whom they have personal knowledge. Again there is attention directed toward attempting to understand the behavior of the teacher and children directly involved.

Related to both of these activities is the discussion that precedes and accompanies them. Concepts are discussed with regard to specific situations, and their applications and limitations made more apparent. One consequence of these sessions is that students seem to become more accepting of the kinds of responsibility which contemporary teacher education theory deems important. For example, discussions on social development of children usually result in some changed views of schools' functions.

To summarize this section, gains were observed as students progressed toward certain outcomes. These were knowledge of subject-matter, and what seems to be a greater understanding of behavior and increased willingness to accept the role of the modern teacher. Another major objective, improvement of attitudes toward the course, showed no gain. This instructional failure was probably due to a lack of teaching activities directed
Comparison of Lecture and Non-Lecture Groups

The second major purpose of this study was to furnish some estimate of the influence of one specific teaching activity upon the attainment of the general course objectives. The teaching activity in question was a series of lectures given by a senior member of the Department of Psychology.

Three sections of students meeting separately at 9:00 met together nine times during the quarter for a series of lectures delivered by Professor John E. Horrocks. The purpose of these lectures was to give structure or direction to the students' own study. In this endeavor, content was secondary to concepts and issues. For example, in a discussion of motivation the lecturer presented conceptions of the relative desirability, educationally speaking, of intrinsic and extrinsic motivation, but did not present any of the great amount of experimental data bearing on these concepts. Obviously, content could not be eliminated entirely and there was no intention that it should be. The lecture series required use of one-fifth of all class time for the 9:00 groups. In the judgment of the instructors, the lecture series constituted a distinct difference in the treatment of the students for the other sections received no lectures during the entire quarter. Table 6 gives the comparative statistics for the measures at the beginning of the quarter.
Table 6
Comparison of Lecture and Non-Lecture Groups on all Measures, Beginning of the Quarter.

<table>
<thead>
<tr>
<th>Group</th>
<th>Number of Cases</th>
<th>Name</th>
<th>Mean</th>
<th>( t )</th>
<th>( t_m )</th>
<th>Diff.</th>
<th>Stat.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Achievement</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lecture</td>
<td>84</td>
<td></td>
<td>50.02</td>
<td>7.54</td>
<td>.82</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Non-Lecture</td>
<td>94</td>
<td></td>
<td>50.91</td>
<td>7.61</td>
<td>.78</td>
<td>.39</td>
<td>.44</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Attitudes</td>
<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lecture</td>
<td>84</td>
<td></td>
<td>94.66</td>
<td>14.09</td>
<td>1.54</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Non-Lecture</td>
<td>94</td>
<td></td>
<td>95.87</td>
<td>14.23</td>
<td>1.47</td>
<td>1.21</td>
<td>.58</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Liking 1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lecture</td>
<td>84</td>
<td></td>
<td>445.71</td>
<td>28.08</td>
<td>3.06</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Non-Lecture</td>
<td>94</td>
<td></td>
<td>449.76</td>
<td>24.86</td>
<td>2.56</td>
<td>4.05</td>
<td>.32</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Adequacy</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lecture</td>
<td>84</td>
<td></td>
<td>244.20</td>
<td>27.75</td>
<td>3.03</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Non-Lecture</td>
<td>94</td>
<td></td>
<td>246.80</td>
<td>23.12</td>
<td>2.56</td>
<td>2.40</td>
<td>.50</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Importance</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lecture</td>
<td>84</td>
<td></td>
<td>259.60</td>
<td>18.40</td>
<td>2.01</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Non-Lecture</td>
<td>94</td>
<td></td>
<td>262.35</td>
<td>18.34</td>
<td>1.89</td>
<td>2.75</td>
<td>.34</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Frequency</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lecture</td>
<td>84</td>
<td></td>
<td>148.83</td>
<td>11.17</td>
<td>1.22</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Non-Lecture</td>
<td>94</td>
<td></td>
<td>149.97</td>
<td>12.68</td>
<td>1.31</td>
<td>1.14</td>
<td>.54</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Importance</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lecture</td>
<td>84</td>
<td></td>
<td>165.26</td>
<td>8.35</td>
<td>.97</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Non-Lecture</td>
<td>94</td>
<td></td>
<td>166.60</td>
<td>8.95</td>
<td>.92</td>
<td>1.34</td>
<td>.32</td>
</tr>
</tbody>
</table>

Liking, Adequacy, and Importance are, respectively, the first three sub-tests of the Teachers Self-Analysis Checklist. Frequency and the second test named Importance are from Part II of the Checklist. The same notation will be used in the following table.

The above table shows that the actual differences between the Lecture and Non-Lecture groups—on all measures—are so slight as to be expected by chance alone one or more times in three. This is also true of the variability, as differences are not even close to the standard for acceptance of the hypothesis of real differences between groups. By the above measures, it appears that the students in the two groups are samples drawn
from the same student population, hence it seems unlikely that there is, in either group, any bias which would systematically influence response to instructional activities. To add further information on this point, the hypotheses that academic aptitude test score and cumulative point-hour ratio were not proportionally distributed were tested by the method of Chi-Square. The hypotheses were rejected as the two traits were, beyond question, proportionally distributed. Thus, by achievement test score, attitudes measure, the five sub-scores of the Checklist, academic aptitude test score and college grades the equivalence of the groups is attested. It will be recalled that the instructor variable is also controlled. Hence, any differences between the groups at the end of the quarter may reasonably be considered as due to the independent variable, lecture versus non-lecture or something correlated with either. Examination of the end of quarter scores may be made from the following table.
Table 7
Comparison of Lecture and Non-Lecture Groups on all Measures, End of the Quarter.

<table>
<thead>
<tr>
<th>Group</th>
<th>Number of Cases</th>
<th>Name of Test</th>
<th>Mean</th>
<th>$\sigma$</th>
<th>$\sigma_n$</th>
<th>Diff.</th>
<th>Stab.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lecture</td>
<td>84</td>
<td>Achievement</td>
<td>65.46</td>
<td>10.72</td>
<td>1.17</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Non-Lecture</td>
<td>94</td>
<td>Attitudes</td>
<td>67.95</td>
<td>9.82</td>
<td>1.01</td>
<td>2.39</td>
<td>.14</td>
</tr>
<tr>
<td>Lecture</td>
<td>84</td>
<td>Liking</td>
<td>93.66</td>
<td>14.30</td>
<td>1.56</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Non-Lecture</td>
<td>94</td>
<td>Adequacy</td>
<td>97.20</td>
<td>14.96</td>
<td>1.23</td>
<td>5.54</td>
<td>.08</td>
</tr>
<tr>
<td>Lecture</td>
<td>84</td>
<td>Importance</td>
<td>462.67</td>
<td>21.70</td>
<td>2.37</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Non-Lecture</td>
<td>94</td>
<td>Importance</td>
<td>464.11</td>
<td>20.16</td>
<td>2.08</td>
<td>1.44</td>
<td>.66</td>
</tr>
<tr>
<td>Lecture</td>
<td>84</td>
<td>Importance</td>
<td>260.65</td>
<td>22.07</td>
<td>2.41</td>
<td>.91</td>
<td>.80</td>
</tr>
<tr>
<td>Non-Lecture</td>
<td>94</td>
<td>Importance</td>
<td>259.74</td>
<td>22.96</td>
<td>2.37</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lecture</td>
<td>84</td>
<td>Importance</td>
<td>273.41</td>
<td>13.02</td>
<td>1.42</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Non-Lecture</td>
<td>94</td>
<td>Importance</td>
<td>273.64</td>
<td>13.59</td>
<td>1.49</td>
<td>.23</td>
<td>.92</td>
</tr>
<tr>
<td>Lecture</td>
<td>84</td>
<td>Importance</td>
<td>155.85</td>
<td>9.86</td>
<td>1.08</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Non-Lecture</td>
<td>94</td>
<td>Importance</td>
<td>157.63</td>
<td>12.62</td>
<td>1.50</td>
<td>1.78</td>
<td>.38</td>
</tr>
<tr>
<td>Lecture</td>
<td>84</td>
<td>Importance</td>
<td>172.18</td>
<td>7.15</td>
<td>.78</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Non-Lecture</td>
<td>94</td>
<td>Importance</td>
<td>173.85</td>
<td>7.92</td>
<td>.82</td>
<td>1.67</td>
<td>.14</td>
</tr>
</tbody>
</table>

None of the obtained differences in Table 7 meet the usual standards of statistical stability. Apparently, neither instructional method—all discussion or discussion plus lecture series—resulted in any differential advantage to the students so far as these measures show.

Additional information may be obtained by comparing the amount of gain registered by each group on each of the measures from the beginning to the end of the quarter. Absence of clear superiority would give added support to the previous finding of
no differences between groups attributable to instructional method. Table 8 presents the data for amount of gain.

Table 8
Mean Gains for the Lecture and Non-Lecture Groups
From the Beginning to the End of the Quarter

<table>
<thead>
<tr>
<th>Name of Test</th>
<th>Mean Gains For:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Lecture Group</td>
</tr>
<tr>
<td>Achievement</td>
<td>15.44</td>
</tr>
<tr>
<td>Attitudes</td>
<td>-1.00</td>
</tr>
<tr>
<td>Liking</td>
<td>16.86</td>
</tr>
<tr>
<td>Adequacy</td>
<td>16.45</td>
</tr>
<tr>
<td>Importance</td>
<td>13.81</td>
</tr>
<tr>
<td>Frequency</td>
<td>7.02</td>
</tr>
<tr>
<td>Importance</td>
<td>6.92</td>
</tr>
</tbody>
</table>

The above table lends support to the previous finding of no differences between groups. Neither is generally superior by the criterion of amount of gain. Again it is concluded that neither instructional method resulted in any differential advantage that can be discerned by these measures.

One further possibility remains to be explored. When the individual sections lose their identity in the large groups it is possible that a gain in one small group might be balanced by a loss in another. This would not be due to the lecture, of course, but it might obscure changes which were due to the lecture. Accordingly, each of the small sections was compared against all others on all the measures, both for the beginning and the end of the quarter. It was found that the 10:00 section (a non-lecture group) was superior to all others on the Student Reaction Survey.
This sole and un-characteristic difference could prove to be disquieting. The problem was attacked first by studying the scores of this instructor's other class. This group did not differ from any other section. There was no disproportionate concentration or shortage of any trait studied in either class. Solution of the problem came when the instructor of the 10:00 class casually observed that there were several neighbors and family friends (and even one relative!) in his class. Apparently at the behest of the relative, a sizeable group of students had waited until the teaching assignments were published and had then simply walked into the 10:00 class. Because of personal acquaintance the instructor felt compelled to allow them to remain. Inspection of their answer sheets for the Student Reaction Survey showed that their scores were all above the mean for their group.

This might be a situation which could cause systematic bias to affect the other measures. At least, the possibility should be studied even though halo effect from personal friendship would not ordinarily be expected to raise scores on, say, an achievement pre-test. The possibility was studied by noting the amount of gain for each section. It may be seen in the following table that the non-chance effect—whatever it may be—of personal friendship does not appear in gain scores for the individual group. It has already been shown that neither the combined Lecture nor Non-Lecture groups enjoys any general superiority.
Table 9
Mean Gain or Loss on All Measures for the Lecture (9:00 A, B, C) and Non-Lecture (2:00, 1:00, 10:00) Sections, and Statistical Stability of Change.

<table>
<thead>
<tr>
<th>Name of Test</th>
<th>9:00 A</th>
<th>9:00 B</th>
<th>9:00 C</th>
<th>2:00</th>
<th>1:00</th>
<th>10:00</th>
</tr>
</thead>
<tbody>
<tr>
<td>Achievement</td>
<td>15.52</td>
<td>15.25</td>
<td>15.66</td>
<td>16.12</td>
<td>16.10</td>
<td>16.48</td>
</tr>
<tr>
<td></td>
<td>.0001</td>
<td>.0001</td>
<td>.0001</td>
<td>.0001</td>
<td>.0001</td>
<td>.0001</td>
</tr>
<tr>
<td>Attitudes</td>
<td>-3.30</td>
<td>.55</td>
<td>-.15</td>
<td>-2.15</td>
<td>6.05</td>
<td>-.45</td>
</tr>
<tr>
<td></td>
<td>.28</td>
<td>.86</td>
<td>.96</td>
<td>.34</td>
<td>.05</td>
<td>.78</td>
</tr>
<tr>
<td>Liking</td>
<td>19.00</td>
<td>16.00</td>
<td>13.70</td>
<td>14.60</td>
<td>21.80</td>
<td>6.70</td>
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<td>.0001</td>
<td>.001</td>
<td>.0001</td>
<td>.0001</td>
<td>.02</td>
</tr>
<tr>
<td>Adequacy</td>
<td>19.70</td>
<td>13.90</td>
<td>17.60</td>
<td>9.60</td>
<td>12.13</td>
<td>16.60</td>
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<td>.003</td>
<td>.001</td>
<td>.04</td>
<td>.02</td>
<td>.0001</td>
</tr>
<tr>
<td>Importance</td>
<td>15.85</td>
<td>12.55</td>
<td>13.15</td>
<td>10.20</td>
<td>13.65</td>
<td>9.85</td>
</tr>
<tr>
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<td>.0001</td>
<td>.0001</td>
<td>.0001</td>
<td>.001</td>
<td>.0001</td>
<td>.0001</td>
</tr>
<tr>
<td>Frequency</td>
<td>5.00</td>
<td>8.95</td>
<td>7.20</td>
<td>4.65</td>
<td>8.48</td>
<td>9.40</td>
</tr>
<tr>
<td></td>
<td>.001</td>
<td>.0001</td>
<td>.0001</td>
<td>.02</td>
<td>.0001</td>
<td>.0001</td>
</tr>
<tr>
<td>Importance</td>
<td>4.95</td>
<td>7.92</td>
<td>8.01</td>
<td>4.29</td>
<td>10.00</td>
<td>7.01</td>
</tr>
<tr>
<td></td>
<td>.0001</td>
<td>.0001</td>
<td>.0001</td>
<td>.02</td>
<td>.0001</td>
<td>.0001</td>
</tr>
</tbody>
</table>

The 10:00 section, which had the highest mean scores on the Student Reaction Survey testings, does not appear generally superior or inferior to the other sections judging by amount of gain. All sections made some substantial gains on all of the measures except the Student Reaction Survey. It may further be seen that amount of gain is not a factor which distinguishes the Lecture from the Non-Lecture groups. It must be concluded that these measures do not show any differential consequences of the instructional methods under question. It was suggested earlier (Chapter II) that method per se might be less important than other factors, such as interpersonal relationships, in determining course outcomes. This tentative idea suffers no loss of credibility because of the present research finding.
Student Traits Related to Course Outcomes

The final major objective of this research project was to attempt to find student traits which would influence the attainment of the course objectives, and which might later be found to be related to instructional activities.

To carry out this purpose, students were separated into groups, usually high, average, and low, according to their status on a given trait. Associations between traits were then tested by the method of Chi-Square. Hypotheses tested were for no association—the familiar "null hypothesis"—between traits, or, less frequently, associations were predicted. To illustrate, no association would be expected between status on cumulative point-hour ratio and attitudes toward the course. On the other hand, a relationship would be expected between cumulative point-hour ratio and grade given in the course. On the following page, Table 10 gives the findings for these tests of association.
Table 10
Probabilities of Relationships Between
Student Characteristics and Course Outcomes.

<table>
<thead>
<tr>
<th>Traits</th>
<th>Grade</th>
<th>Achievement</th>
<th>Attitudes</th>
<th>Liking</th>
<th>Adequacy</th>
<th>Importance</th>
<th>Frequency</th>
<th>Importance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sex¹</td>
<td>.10</td>
<td>.20</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>.20</td>
<td>.05</td>
</tr>
<tr>
<td>Class Rank</td>
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<td>.05</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>.20</td>
<td></td>
</tr>
<tr>
<td>Academic Aptitude²</td>
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<td>.001</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>.02</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>Point-Hour Ratio</td>
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<td>.001</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>Achievement</td>
<td>.001</td>
<td>.001</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>.10</td>
<td>.20</td>
</tr>
<tr>
<td>Major³</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>.02</td>
<td>.20</td>
<td>x</td>
<td>.02</td>
<td>x</td>
</tr>
<tr>
<td>G-Z Factor S</td>
<td>x</td>
<td>x</td>
<td>.001</td>
<td>.02</td>
<td>.02</td>
<td>.001</td>
<td>x</td>
<td>.05</td>
</tr>
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<td>G-Z Factor F</td>
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<td>.10</td>
<td>.05</td>
<td>x</td>
<td>x</td>
<td>.05</td>
</tr>
<tr>
<td>G-Z Factor P</td>
<td>x</td>
<td>x</td>
<td>.02</td>
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<td>x</td>
</tr>
<tr>
<td>Attitudes</td>
<td>x</td>
<td>x</td>
<td>.001</td>
<td>.20</td>
<td>.20</td>
<td>x</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>Liking</td>
<td>.20</td>
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<td>x</td>
<td>.001</td>
<td>.001</td>
<td>.001</td>
<td>.001</td>
<td>.01</td>
</tr>
<tr>
<td>Adequacy</td>
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<td>x</td>
<td>.05</td>
<td>.001</td>
<td>.001</td>
<td>.001</td>
<td>.001</td>
<td>.20</td>
</tr>
<tr>
<td>Importance</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>.001</td>
<td>.001</td>
<td>.001</td>
<td>.001</td>
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</tr>
<tr>
<td>Frequency</td>
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<td>x</td>
<td>.20</td>
<td>.01</td>
<td>.02</td>
<td>.05</td>
<td>.001</td>
<td>.001</td>
</tr>
<tr>
<td>Importance</td>
<td>.20</td>
<td>.10</td>
<td>.20</td>
<td>.001</td>
<td>.01</td>
<td>.001</td>
<td>.001</td>
<td>.001</td>
</tr>
</tbody>
</table>

¹ Females superior.
² Association of Aptitude and Importance is inverse.
³ Elementary majors have the superior scores.
Sex Membership. There is no reason to expect that sex would be related to any of the various outcomes unless perhaps it might, as with this sample, be related to achievement. One association is apparently stable. Either this is a real association or an accident of sampling. The latter seems more likely in view of the fact that another measure, the Masculinity sub-test of the Guilford-Zimmerman Temperament Survey, failed to predict any sex differences in outcomes although sex differences in score on this sub-test were highly stable, with approximately 86% of the females scoring below 86% of the males.

Class Rank. This characteristic may be expected to be related to achievement inasmuch as students at The Ohio State University are unselected upon entrance, but very rapidly become selected upon ability to survive academically. Progressive elimination of the less able students thus should progressively act to raise the average scores of the several class levels, Freshman to Senior. The expected association is found for class rank and the achievement test.

Two highly important outcomes of the course which are related to class rank are not given in Table 10. On the attitudes pre-test, the Sophomores contributed a marked disparity between the expected and observed frequencies in the Chi-Square table. Their scores were much lower than the other groups. By the end of the quarter the Sophomores had become indistinguishable from other class ranks. This seems a very worth-while outcome. The second
outcome of particular note is the elimination of an inverse relationship between class rank and score on the Frequency sub-test of the Checklist observed at the beginning of the quarter. Neither of these outcomes can be claimed to result from a deliberate attempt at correction, for instructors didn’t know the conditions existed. While this un-taught for improvement is fortunate, it would seem desirable that the teaching of the course should be more positive.

Academic Aptitude, Cumulative Point-Hour Ratio, and Achievement Test. Each of these would normally be expected to have relationships with grades or other measures of achievement, and the expected associations were found. Another outcome, one of particular importance, is not shown in Table 10. This is the relationship between academic aptitude test score and amount of gain on the achievement test from the beginning to the end of the quarter. The Chi-Square test showed this association to be stable at better than the .05 level but not quite at the .02 level. This finding is important because the instructors, despite their occasional discussions about teaching the less able students, really didn’t understand that students of low aptitude have difficulty in making large gains in knowledge without some special treatment. It would seem desirable early to identify individual students by academic aptitude and give thought to developing instructional procedures more appropriate to the ability of the less able people—granting, of course, that it is worthwhile to try to
save them. Also related to this finding are the obvious and educationally important implications for selection of students.

What seems to be a very undesirable relationship is the inverse finding for academic aptitude and the Importance sub-test of the Checklist. Students of high aptitude scored lower in their estimates of the importance of teachers' duties than those of low aptitude. No such relationship was found for cumulative point-hour ratio and this, or any other, sub-test. The proper interpretation of these contradictory findings is not known. Again, however, it is certainly indicated that the teachers of Educational Psychology 407 make more of an effort to know and teach to the individual students in their classes.

Major Field. The finding of statistical stability for this and the Liking and Frequency sub-tests of the Checklist is very suggestive. Elementary Education students in this sample were superior to the Secondary Education majors. Apparently, the Secondary people do not feel that they will get as many inter-personal relationships satisfactions from their work as the Elementary majors anticipate from theirs, although they feel as competent to carry out the specified teachers' duties. Rather tentatively, then, here may be a real selective factor, susceptible of objective measurement, and potentially useful in the selection and guidance of students who wish to become teachers.

Another outcome not indicated in Table 10 again gives
credit to Educational Psychology 407. The relationship between major field and the Frequency sub-test of the Checklist was not nearly as stable statistically at the end of the quarter as it had been at the beginning. This difference is not desirable, and that it tended to disappear through the disproportionately greater increase in scores of the Secondary Education majors is a source of satisfaction. Another way of stating the same finding is that the Secondary majors did not contribute so much to the difference between the observed and expected frequencies of the Chi-Square table.

Guilford-Zimmerman Temperament Survey Factors S, F, and P. These factors were thought to be possibly related to outcomes other than achievement. Students in Educational Psychology 407 use the techniques of large and small group discussion to a considerable extent. Teachers likewise work with groups of people and it might be expected that liking for such quasi-social activity as group discussion would be predictive of liking for certain phases of teachers’ work. The sub-tests of the Guilford-Zimmerman Temperament Survey which are of interest here purport to be valuable objective measures of aspects of just such quasi-social activities, and hence might predict attitudes or scores on the Checklist. The person who scores high on Sociability is supposed to be "at ease with others". He enjoys the company of others and "readily establishes intimate rapport". (19) The Checklist measures liking for work with groups of people. The
expected relationships were found for Factor S, Sociability, and thus another potential measure is added to those available for predicting course outcomes, and for selection and guidance procedures. The other sub-tests of the Guilford-Zimmerman Temperament Survey were not consistently related to course outcomes.

**Attitudes.** Scores on the Student Reaction Survey do not predict end of quarter measures except the repetition of the same test. As previously noted, there seems to have been but little change, and none which could be attributed to the educational experiences of Educational Psychology 407. Presumably this measure registers something not measured by the other devices.

**Teachers' Self-Analysis Checklist.** As indicated in Table 10, there are but few scattered and inconsistent relationships between the Checklist sub-tests and such traits as sex and academic ability and characteristics such as class rank, major, or achievement test performance. These all are thought to be determiners of course outcomes such as are indicated by course grades. The Checklist scores, and the gains in score, are apparently unrelated to such traits. It would seem desirable to conduct further studies especially to discover traits related to Checklist performance. Again, this has obvious implications for selection of students.

One general conclusion may be drawn from Table 10 as a
whole. There is a dichotomy between measures associated with subject-matter achievement and those associated with attitudes, personality characteristics, and what might be called measures of appreciation of teachers' duties. By and large, the latter three do not seem highly related either. Yet, the facts about these relationships, which certainly are not new in Psychology, are consistently ignored even in Psychology classes. Students are graded only on their knowledge of the subject-matter.

Generally speaking, grade assigned a student is taken to indicate all important outcomes, at any rate by the person who reads the transcript if not by the person who gives the grade. It is doubtful if many students remember the factual material on which they are graded for a very long time after the end of the course. One outcome which is usually thought to be of a rather temporary nature is thus allowed to determine students' marks, when, actually, there are probably several important outcomes which are at least as enduring as knowledge of subject-matter.

The findings for this research objective may be summarized. Sex and class rank, often thought to be associated with course outcomes, were discovered to be unrelated to measures of outcomes used in this study. There was a tendency for relationship with academic achievement. Cumulative point-hour is unrelated to any measure except knowledge of subject-matter. Academic aptitude test score and an achievement test given at the beginning of the
quarter were also related to this latter outcome. Any one of the three might be used in future studies where it was desirable to match or equate students, whereas sex and class rank seem unimportant. Major area was related to two of the Checklist sub-tests, with the Elementary Education majors having the superior scores. Instructional efforts devoted to improving the relative position of the Secondary Education majors would seem to be in order. One sub-test of the Guilford-Zimmerman Temperament Survey was related to performance on the Checklist, thus affording another possible measure for the guidance of students. Generally speaking, measures of intellectual ability were not associated with temperament or personality variables or with the several sub-tests of the Teachers' Self-Analysis Checklist.

Follow-Up Study

It was hoped that this research might include a follow-up study that would give some indication of the permanence of the course outcomes. Of the students included in this project during the Winter Quarter, 1953, 88 were present during the Spring Quarter, 1954. Nearly all were contacted but only 18 responded to requests for additional data. In Table 11 are given the mean scores for these 18 female students for March, 1953 and June, 1954. Rank-difference correlations are also given.
Table 11
Follow-Up Study: Mean Scores and Rank-Difference Correlations for the Teachers' Self-Analysis Checklist and the Student Reaction Survey.

<table>
<thead>
<tr>
<th>Measure of Test Given:</th>
<th>March 1953</th>
<th>June 1954</th>
<th>Stability of Difference</th>
<th>Rho</th>
</tr>
</thead>
<tbody>
<tr>
<td>Liking</td>
<td>465.06</td>
<td>455.00</td>
<td>.01</td>
<td>.75</td>
</tr>
<tr>
<td>Adequacy</td>
<td>265.11</td>
<td>255.11</td>
<td>.10</td>
<td>.65</td>
</tr>
<tr>
<td>Importance</td>
<td>275.17</td>
<td>267.22</td>
<td>.10</td>
<td>.70</td>
</tr>
<tr>
<td>Frequency</td>
<td>160.94</td>
<td>155.78</td>
<td>.05</td>
<td>.69</td>
</tr>
<tr>
<td>Importance</td>
<td>174.28</td>
<td>168.39</td>
<td>.01</td>
<td>.47</td>
</tr>
<tr>
<td>Attitudes</td>
<td>97.17</td>
<td>90.72</td>
<td>.10</td>
<td>.72</td>
</tr>
</tbody>
</table>

With this small group of 18 cases it is evident that there has been some loss in score. However, and important for teaching and for student selection and guidance, these cases did not change greatly relative to each other. The high scoring students of March, 1953 were still the higher in June, 1954 and the low scoring students kept their positions also. It would seem to be a matter of considerable importance to confirm the present finding with further studies, for it would seem to be somewhat dubious practice to generalize from this group to even the other students in the original group. It would also seem desirable to establish empirical validities with other measures predicting, and measuring, teaching ability.
CHAPTER V
REVIEW AND DISCUSSION

Background of the Problem

Psychology has been a part of the professional preparation of teachers since the earliest days of the normal schools. Many people concur in the opinion that it is essential to teacher preparation, and it is a frequent requirement for certification as a teacher.

Although generally required, there is scarcely any other point of agreement regarding the course. There is great variety in course content, instructional methods, level at which the course is presented, and the like. This lack of agreement creates obstructions to attempts to make a general evaluation of the merits of psychology in the preparation of teachers.

Since there is this difficulty in making a general evaluation it would seem desirable, for three major reasons, to make local evaluations. These are actually functions of evaluation.

1. Thorough evaluation shows the actual outcomes of instruction whatever they may be.

2. The effect of a given instructional activity may be determined by a study of the outcomes.

3. Relationships between certain characteristics of the students and the course outcomes may be discovered.

The objectives of the present research project are indicated by these three functions. They are, to make a general course evaluation, to find the influence of a specific
instructional activity, and to find relationships between certain student characteristics and some course outcomes.

Other Studies on the Teaching of Psychology

Three kinds of research studies have been described. They are, studies utilizing the class as an instrument for therapy (including socialization), studies comparing the so-called instructor-centered with student-centered methods of instruction, and evaluations of some particular teaching technique.

All of these research reports affirm the value of careful study of course outcomes, all support the conclusion that Educational Psychology can be made vital in teacher preparation, and most either assert or imply that a laboratory or practicum approach will be most advantageous in terms of transfer to a teaching-learning situation with children.

Two general criticisms apply to these studies. First, only rarely have follow-up studies been reported. Secondly, there has been no attempt made to relate teaching activities to student characteristics. The reader is left to infer that the reported instructional activity is equally efficacious with all students. This is, of course, hardly conceivable. In the present study the attempt has been made to avoid these shortcomings.
Subjects, Procedures, and Sources of Data

The 178 subjects used in this research project were all regularly enrolled students in the College of Education of The Ohio State University. All were taking Educational Psychology 407, one of a sequence of courses for the professional development of teacher-candidates. They were of all class ranks with a majority of Sophomores. There were 51 males and 127 females. Of the males, 5 were Elementary Education majors and 46 were majoring in Secondary Education. Fifty-nine of the females were Elementary and 68 were Secondary Education majors.

The students were taught in six sections of approximately 30 students each by three Graduate Teaching Assistants in the Department of Psychology. Three of the sections met at the same hour, 9:00, while the other three met at different hours. Each instructor taught one of the 9:00 groups and one other.

The basic procedure for collection of data was the administration of tests of various sorts at the beginning and again at the end of the quarter. The data were variously combined and analyzed in order to furnish information for each of the objectives.

Data used in this project were taken from the following sources: An objective type achievement test constructed by the writer; an attitudes survey constructed by the writer;
a Teachers' Self-Analysis Checklist (44); four sub-tests of the Guilford-Zimmerman Temperament Survey (19); students' reports of cumulative point-hour ratio; Report of Test Percentiles (published by the Occupational Opportunities Service of The Ohio State University); and, grade in Educational Psychology 407 based on four objective achievement tests. These devices represent a selection, from measuring techniques available, imposed by the necessity of conducting classes with a minimum of interference with the usual activities.

Procedure followed in treatment of data for two of the objectives of this research project (general evaluation and assessing the influence of the lecture series) was that of testing for differences between mean scores and variability of groups. This was done either for the same group from the beginning to the end of the quarter, or for different groups at the beginning and again at the end of the quarter. The experiences of the enrollment in the course are considered as "interpolated" between these tests. The technique of Chi-Square was used for the third objective, that of finding relationships between student characteristics and course outcomes.

**Findings**

**General Outcomes of Instruction.** Increased knowledge of psychology is one important objective of the course. Changes in knowledge were sampled by a 100-item objective test given at the beginning and again at the end of the course. The
gains which occurred were at a high level of statistical stabil-
ity. The likelihood that they might be duplicated merely by
chance was less than .0001. It is noteworthy that some students' 
pre-test scores were superior to the mean score on the same
test given again at the end of the quarter. This is by no
means a unique finding (27) (28) (59). At least one writer
has urged that these differences be taken into account. One
practice is to give the abler students examination credit for
courses. (59)

The second major objective of the course was the improve-
ment of attitudes toward the course in particular and psychology
in general. No stable change was noted; the obtained gain was
one that might be equalled by chance alone in 86 of 100 trials.
This outcome was judged to be due to the instructors' failure to
recognize attitude change as an important objective.

Another important course objective which is of interest in
this research is to create changes in the students' appreciation
of teaching which are of such a nature that the students can be
said to have an increased psychological sophistication about their
future teaching duties and relationships with children. This
change in the students can be most specifically understood as
increased willingness to try to understand human behavior by
reference to psychological principles of widely accepted
generality.

The attainment of this objective is indicated by a comparison
of the sub-test scores of the Teachers' Self-Analysis Checklist given at the beginning and end of the quarter. Gains which occurred would scarcely be duplicated by chance alone once in ten thousand trials. Three instructional activities of Educational Psychology 407 seem to be related to this fine outcome. These are, first, use of a series of prepared case studies, secondly, a paper describing two kinds of personal experiences—constructive and destructive—which were caused by some teacher, and lastly, many discussions accompanying these and other class experiences. These discussions are oriented toward showing the relevance of psychological principles for understanding behavior.

Comparison of Instructional Methods. Proponents of instructional methods frequently described as "student-centered" versus "instructor-centered" have engaged in a sometimes acrimonious dispute over the respective merits of these methods. In general, those who hold for the primacy of gains in the subject-matter of a course favor "instructor-centered" teaching procedures while those who see the class as primarily a socializing or therapeutic agency hold for "student-centered" teaching. Studies reviewed by this writer indicate that "instructor-centered" teaching is superior by the criterion of gains in knowledge but that student attitudes or reactions to the teaching procedures may vary from one study to the next. This may suggest that method per se (except in therapy classes) is almost peripheral to some more central variable such as students'
feeling of freedom to accept or reject a personal or informal relationship with the instructor.

In this research project three sections of students received a series of nine lectures given by a senior member of the Department of Psychology at The Ohio State University, Professor John E. Horrocks. The other three sections had the usual discussion or other activity during these periods. In the judgment of the instructors the lectures constituted a distinct difference in the treatment of the classes, but there were no other gross differences in instruction for the groups.

Comparisons of combined lecture and non-lecture groups, and of individual lecture and non-lecture groups, and study of amounts of gain on the several measures of outcomes for the combined and individual sections all lead inescapably to the conclusion that there were no discernible differential consequences of the two instructional methods. This supports the suggestion given above, that method per se is probably not central in determination of outcomes except perhaps in therapy classes.

**Student Traits Related to Course Outcomes.** Failure to relate student characteristics to course outcomes was a shortcoming of previous studies in the evaluation of an Educational Psychology course. In the present project students were arbitrarily divided into, usually, three groups by their status on a given trait and then compared on other traits and course
outcomes. The method of Chi-Square was used to test the hypothesis of no predicted association, or less frequently, an association was predicted. As an example of a situation in which no association was predicted, students divided into high, average, and low groups by their scores on the achievement pre-test were not expected to fall into the same groups (or into inverse relationship) by their scores on the attitudes test. However, they were expected to fall into pretty much the same groups when achievement test scores and cumulative point-hour ratio were compared. As a rough test of this procedure, the expected associations were found and it was then assumed that other existing but unsuspected associations would also be discovered by this procedure.

1. Sex Membership. No stable associations are believed to exist between sex and any measured outcome. There was a tendency for the females to be superior on measures of achievement.

2. Class Rank. At The Ohio State University, class rank presumably indicates academic ability because of selective elimination of the less able students. Expected relationship between class rank and achievement was found. However, other characteristics have a much more stable relationship with achievement.

3. Academic Aptitude Test, Cumulative Grades (Point-Hour Ratio), and Achievement Pre-Test. These three aspects of academic ability were found to have highly stable relationships
with the achievement post-test and also with course grade based on very thorough objective achievement testing. Furthermore, amount of gain on the achievement test was found to have a stable relationship with academic aptitude test scores. Some students of rather low academic aptitude actually gained but one, two, and three raw score points on the achievement post-test.

4. Major Field. Elementary Education majors were superior to the Secondary Education majors on two of the sub-tests of the Teachers' Self-Analysis Checklist, Liking and Frequency. Seemingly, the Secondary majors do not anticipate as many interpersonal satisfactions from their work as do the Elementary majors.

5. Guilford-Zimmerman Temperament Survey Factors S, F, and P. The authors state that these are "probably clear indicators" of "sociability", "friendliness", and "human relations" skills. As these characteristics are defined they may be interpreted at face value. Only Factor S has several relationships with the measures of course outcomes. High scores on this measure were associated with high scores on the attitudes survey and four of the five sub-tests of the Checklist.

6. Attitudes. As measured by the Student Reaction Survey, attitude scores at the beginning of the quarter were associated only with the same test repeated at the end of the quarter.
7. Teachers' Self-Analysis Checklist. Only scattered and inconsistent associations were found for the pre-tests of this device and other traits and measures. Very stable relationships were found between the several parts of the Checklist both at the beginning and end of the quarter, and from the beginning to the end of the quarter.

**Implications of Findings for Teaching the Course**

Probably no one would argue against either the desirability or the possibility of increasing students' knowledge of subject-matter. On the other hand, there sometimes is doubt that it is possible to increase the students' appreciation of some possible relationships of psychological principles to teachers' duties and relationships with children. This study has shown that both outcomes are possible. For teacher preparation—especially for teacher preparation—it would seem desirable to give equal weight to both outcomes in assigning students' grades.

Equally instructive for improvement of teaching was the lack of any attitudes gain. It seems likely that this failure was due to a prior failure clearly to present attitude change to the instructors as an important course objective. It seems indicated, therefore, that all objectives should be clearly stated, preferably in everyday language and not in flowery generalities, and they must be so defined that it is possible to measure in some way the degree of their attainment.
Another point— not new, but certainly of vital importance—is that it is necessary to take individual differences into consideration if objectives are to be completely attained. This research has shown an almost staggering range of differences among the students who were the subjects in this research project, differences which were directly related to important course outcomes. For example, in academic ability, some of the students would not have been distinguished from average— perhaps even less than average— high school students. They found the subject matter so complex as to make it impossible for them to gain more than a point or two on the second administration of the achievement test. On the other hand, superior students were bored by the—to them— slow pace and elementary level of the class.

Another area of considerable differences was the students' knowledge of psychology prior to taking the course. All students had had the prerequisite course, but judged by test performance some students knew hardly anything while others did better on the pre-test than the majority did on the post-test. Worcester noted this situation as early as 1926, and recommended course credit by special examination for the well prepared students. (39)

Another type of individual difference, one which seems very important for such a class as Educational Psychology 407, was in attitudes toward the course and toward the teaching profession.
Some of these Education majors were quite antagonistic toward the teaching profession and many things connected with it. It does not seem wholly reasonable that such students should be allowed to continue with plans for teaching when this profession gives promise of antipathy and frustration.

These three differences, and probably others as well, are apparently directly related to students' ability to learn, need to learn, and willingness to learn. As a matter of educationally profitable standard operating procedure, classes of students might be appraised on these characteristics at the beginning of the course. This pre-testing might reveal that both the course content and the instructional procedures were in need of revamping. Making the indicated changes might distress the instructor, but improve the instruction.

What is true for a single course is no less true for a series or program of courses. Adequate, objective measures are available, or would become available once the program objectives were clearly stated. It does not seem far-fetched to say that instruction would be mightily improved if both objectives and students' characteristics were thoroughly understood.

Implications of the Findings for Further Research

A continuing need is refinement of measures. Current practice seems to elevate factor analysis to the highest role in test construction. However, empirical investigations to establish the
validity of measures should not be neglected. This is especially
ture true since the results of the follow-up study—ineconclusive as
they must be regarded because of the small number—indicate that
there are enduring characteristics which, very possibly, are re-
lated to teaching effectiveness. It seems desirable that any
means of measuring any aspect of teaching ability should be
exploited to the fullest possible extent.

In carrying out research similar to this project, one
difficulty is that it is expensive of time and effort. Fortu-
ately, there are ways of increasing the returns from effort
expended. This study has shown that certain traits are relevant
and others unimportant for this sort of research. Hence, strati-
fied sampling could be used. This would permit the use of a
smaller group of subjects, which, in turn, would allow care-
fully controlled research which would not disrupt the work of
many students while at the same time allowing considerably
greater variation of experimental conditions.

Paralleling these experimental investigations, it should be
possible to continue to study relationships between student
characteristics and course outcomes in a very inexpensive
manner. It would be a matter of simple record-keeping routine
to use the addend system devised by Toops (54) for identifying
"ulstriths" (psychologically meaningful and unique groups) for,
say, three quarters. In this way, large numbers of cases could
be accumulated for each "ulstrith". These groups could then be
compared for differences in the several measured course outcomes. This actuarial work could be done by the students themselves, or by a part-time student stenographer. Several different sets of "ulstriths" might be compiled and studied at the same time. One set might very well be based on patterns of sub-test scores of the Checklist.

An obvious advantage of this suggested project is that it would provide data, objective data, on various characteristics and competencies which could later be related to success in teaching and to student selection and guidance. Information routinely collected and recorded at the present time might be utilised for this purpose.

Findings regarding the traits of students which are related to the various measured outcomes show that some traits, heretofore thought to be quite important, need not be controlled in any future research of this type. Neither sex nor class rank were related in any great degree to course outcomes. Continuation of study using "ulstriths" should, however, control for either academic ability or achievement, and major field, personality variables measured by the Student Reaction Survey and the Guilford-Zimmerman Temperament Survey, and attitudes toward teaching.
Conclusion

This research had three objectives, a general evaluation of outcomes of instruction in Educational Psychology 407, a comparison of the relative influence of different instructional methods on the outcomes of the course, and identification of student traits related to course outcomes. These objectives have been attained. Some contributions of Educational Psychology 407 to teacher preparation have been noted. Instructional methods studied did not apparently cause any differences in outcomes. Some suggestions were offered for improving the evaluation and instruction in the course, and suggestions for future research were given.
BIBLIOGRAPHY


53. Toops, Herbert A. *The Ohio State Psychological Examination.* Columbus: The Ohio State University Research Foundation, 1950.


55. Watson, G. B. "What Shall be Taught in Educational Psychology?" *Journal of Educational Psychology, 17:577-99, 1926.*


TEACHER'S SELF-ANALYSIS CHECKLIST

EXPLANATION AND DIRECTIONS:

Part I of this checklist is a group of 98 statements which describe situations that arise in the everyday work of a teacher. Among these statements are some indicating situations which would make you feel particularly satisfied with teaching as a job. Other statements indicate situations which would perhaps make you dissatisfied with teaching as a job. Still other statements indicate situations to which you would be indifferent.

You are to read each statement, and in the answer space provided, use the appropriate number to indicate the degree of satisfaction with the situation described in the statement.

Secondly, please indicate how successful you would be in dealing with the situation described in each statement. There is an answer space and appropriate numbers provided for this response.

Finally, indicate to the best of your judgment the importance of the situation described in each statement. A third answer space and appropriate numbers are provided.

For Part I, then, you must make three responses to each statement. Even though you may not know how you would react in the actual situation, please respond to all statements, for it is the purpose of this checklist to find out how teachers-in-training feel about aspects of their future work.

Part II of the checklist inquires about your attitude in your relationships with students. Directions for responding are given on the first page of Part II.

SOME ADDITIONAL COMMENTS:

There are no "right" and "wrong" answers. Some people would agree and some disagree with you no matter how you respond. The best answers are those which give your honest opinions.

This is not an attempt to check up on you as an individual. Your responses on the checklist will not affect your grade, nor will they become part of your records.

Note that the three responses required for each statement in Part I are independent of each other. Thus, you might feel very dissatisfied with some incident that arose in your work, be able to deal with it very successfully, and regard it as of average importance. Responses may also be independent of each other in Part II.

(name)_________________________________ (hour)_________________________________

(instructor)_________________________________ (elementary or secondary)_____________________

Part I_________________________________ Part II_________________________________
<table>
<thead>
<tr>
<th></th>
<th>To make an effort to be at ease among children at their non-school affairs.</th>
</tr>
</thead>
<tbody>
<tr>
<td>22</td>
<td>To be invited to students' homes.</td>
</tr>
<tr>
<td>23</td>
<td>To be democratic in your attitude to all pupils.</td>
</tr>
<tr>
<td>24</td>
<td>To be accepted in the community as a recognised child leader.</td>
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<tr>
<td>25</td>
<td>To be considerate of the peculiar points of view, likes, dislikes, etc. of children.</td>
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<tr>
<td>26</td>
<td>To act as a leader or sponsor of child activities.</td>
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<tr>
<td>27</td>
<td>To utilise your skills and abilities as an extra-curricular or community leader of children.</td>
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<tr>
<td>28</td>
<td>To think of children as individuals rather than to think of them as groups expected to follow certain patterns of behavior.</td>
</tr>
<tr>
<td>29</td>
<td>To understand and be sympathetic with adolescent problems.</td>
</tr>
<tr>
<td>30</td>
<td>To maintain an orderly class.</td>
</tr>
<tr>
<td>31</td>
<td>To consider the total school program and refrain from disrupting it with your own extra-class activity program.</td>
</tr>
<tr>
<td>32</td>
<td>To be aware that in an extra-class situation you still have certain responsibilities as a teacher.</td>
</tr>
<tr>
<td>33</td>
<td>To refrain from discussing confidential school matters with non-school people.</td>
</tr>
<tr>
<td>34</td>
<td>To be as popular among the children as most of the other teachers.</td>
</tr>
<tr>
<td>35</td>
<td>To refrain from commenting to one child about another.</td>
</tr>
<tr>
<td>36</td>
<td>To keep enthusiastic about your profession.</td>
</tr>
<tr>
<td>37</td>
<td>To keep promises and appointments made to children in and out of school.</td>
</tr>
<tr>
<td>38</td>
<td>To learn about the state of health of the children in your classes.</td>
</tr>
<tr>
<td>39</td>
<td>To make provision for individual differences.</td>
</tr>
<tr>
<td>40</td>
<td>To learn about the out-of-school interests of children in your classes.</td>
</tr>
</tbody>
</table>
41. To learn the socio-economic background of your students.
42. To have some knowledge about the children in school who are not in your classes.
43. To meet the parents of the children under your charge.
44. To interpret the children's problems to their parents.
45. To learn the occupational plans of the children you direct.
46. To give occupational advice.
47. To plan with parents for the future education of their children using objective tests as a basis.
48. To interpret aptitude scores.
49. To interpret intelligence test scores.
50. To find out the social status of your students among their contemporaries.
51. To understand the attitudes of young people.
52. To locate and diagnose the specific weaknesses of children in your classes.
53. To determine the reasons behind maladjustment as you observe it in your pupils.
54. To know how the children in your classes are getting along in their other classes.
55. To intercede with another teacher on behalf of a pupil in whom you are interested.
56. To intercede with the administration on behalf of a pupil in whom you are interested.
57. To aid in the solution of problems of child delinquency; lack of recreational facilities, etc.
58. To know what is going on in local child affairs outside the school.
59. To understand the psychology of adolescents.
60. To give advice about children to other adults.
61. To cooperate with other adults in child community affairs.
62. To apply your knowledge of the physical facts of child growth, puberty, etc.
63. To know and be able to recognize the major problems of adolescence.
64. To find the answers to the aspects of child growth and development which confront you.
65. To deal with the causes of maladjustments of behavior.
66. To find out what children really like.
67. To make provision, in planning class materials and procedures, for childish likes and dislikes.
68. To utilize the psychology of learning as it applies to your subjects.
69. To make the subject matter that you teach seem worthwhile to your students.
70. To plan your work so that your classes are interesting.
71. To inspire the children to do voluntary work.
72. To teach so that your classes maintain a high average on competitive examinations.
73. To be fair.
74. To use visual aids.
75. To use diagnostic measures.
76. To use objective type tests.
77. To use essay type tests.
78. To teach for attitudes.
79. To be consistent in your philosophy of education.
80. To use graphic methods of presentation.
<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
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</thead>
<tbody>
<tr>
<td>81.</td>
<td>To avoid being a part of any faculty cliques.</td>
<td></td>
</tr>
<tr>
<td>82.</td>
<td>To cooperate with other teachers.</td>
<td></td>
</tr>
<tr>
<td>83.</td>
<td>To cooperate with the administration.</td>
<td></td>
</tr>
<tr>
<td>84.</td>
<td>To make an effort to like the people of the community in which you teach.</td>
<td></td>
</tr>
<tr>
<td>85.</td>
<td>To cope with school routine.</td>
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<tr>
<td>86.</td>
<td>To keep the child in the foreground in the performance of your professional activities.</td>
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<tr>
<td>87.</td>
<td>To be recognised out of school hours as being a teacher.</td>
<td></td>
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<tr>
<td>88.</td>
<td>To be able to continue teaching regardless of salary.</td>
<td></td>
</tr>
<tr>
<td>89.</td>
<td>To work for a Board of Education which expects its teachers to take additional graduate work.</td>
<td></td>
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<tr>
<td>90.</td>
<td>To find your social contacts among groups other than teachers.</td>
<td></td>
</tr>
<tr>
<td>91.</td>
<td>To have a detailed plan of study to follow.</td>
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<tr>
<td>92.</td>
<td>To have the parents of your children compliment you on your teaching.</td>
<td></td>
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<tr>
<td>93.</td>
<td>To have the parents of your pupils come to you for conference.</td>
<td></td>
</tr>
<tr>
<td>94.</td>
<td>To be able to carry out your own decisions even when community pressure or administrative policies might indicate another course.</td>
<td></td>
</tr>
<tr>
<td>95.</td>
<td>To analyse the suggestions of children in an effort to learn more about their interests.</td>
<td></td>
</tr>
<tr>
<td>96.</td>
<td>To establish yourself in a position of leadership among adolescents on your worth as a teacher rather than on your authority as a teacher.</td>
<td></td>
</tr>
<tr>
<td>97.</td>
<td>To bring together in a working system the things you know about children and your knowledge of subject matter.</td>
<td></td>
</tr>
<tr>
<td>98.</td>
<td>To plan every class so that it provides a worthwhile educational experience for the children.</td>
<td></td>
</tr>
</tbody>
</table>
### PART II
YOUR RELATIONSHIPS WITH STUDENTS

How to check this section: 1. Write the code number in column one which best describes your position or your attitude in your relationships with students. 2. Write the code number in column two which best describes how important you feel each attitude or activity really is in good school practices.

<table>
<thead>
<tr>
<th>Column I</th>
<th>Column II</th>
</tr>
</thead>
<tbody>
<tr>
<td>4 - always do this</td>
<td>4 - very important</td>
</tr>
<tr>
<td>3 - usually do this</td>
<td>3 - average importance</td>
</tr>
<tr>
<td>2 - occasionally do this</td>
<td>2 - not important</td>
</tr>
<tr>
<td>1 - never do this</td>
<td>1 - harmful</td>
</tr>
</tbody>
</table>

1. Do you try to be genuinely friendly with your pupils? 1.
2. Do you gain the confidence of your pupils? 2.
3. Do you ever tell other teachers what students tell you in confidence? 3.
5. Do your pupils cooperate with you in planning and working? 5.
7. Do you take some time to have fun with your pupils? 7.
8. Do you show your pupils the same courtesy in speech and manners that you expect of them? 8.
9. Do you have favorites among your pupils? 9.
10. Do you expect your students to accept your own opinions because of the time involved in permitting them to formulate their own? 10.
11. Do your students come to your home outside of school? 11.
12. Do you visit in your pupil's homes? 12.
14. Do you attend the school parties or dances? 14.
15. Do you go to the special school events such as plays, concerts, etc? 15.
16. Do you make use of the past records of your students in order to deal more effectively with their problems? 16.
17. Do you make an effort to meet the parents of your pupils? 17.
<table>
<thead>
<tr>
<th>Column</th>
<th>Question</th>
</tr>
</thead>
<tbody>
<tr>
<td>I</td>
<td>18. Do you pupils discuss with you problems which are not directly connected with their school work?</td>
</tr>
<tr>
<td>II</td>
<td>19. Do you follow up the attainments of your pupils who have left your classes?</td>
</tr>
<tr>
<td></td>
<td>20. Do you find out why a student has dropped out of school or out of your class?</td>
</tr>
<tr>
<td></td>
<td>21. Do you spend extra time with the pupil who has health or emotional problems?</td>
</tr>
<tr>
<td></td>
<td>22. Do you plan activities that will make your students independent of your instruction?</td>
</tr>
<tr>
<td></td>
<td>23. Do you try to interest the shy pupil in participating in extra-curricular activities?</td>
</tr>
<tr>
<td></td>
<td>24. Do you discuss examinations and grades with your students so that they understand and do not dread them?</td>
</tr>
<tr>
<td></td>
<td>25. Do you vary your methods and materials to keep your pupils interested?</td>
</tr>
<tr>
<td></td>
<td>26. Do your pupils seem to be happy in your classes?</td>
</tr>
<tr>
<td></td>
<td>27. Do you have discipline problems?</td>
</tr>
<tr>
<td></td>
<td>28. Do you differentiate between mischief and problem behavior?</td>
</tr>
<tr>
<td></td>
<td>29. Do you give extra help to the slow pupils in your classes?</td>
</tr>
<tr>
<td></td>
<td>30. Do you present material in several ways to the children who fail to comprehend?</td>
</tr>
<tr>
<td></td>
<td>31. Do you try to find out why a capable child seems to be making little progress?</td>
</tr>
<tr>
<td></td>
<td>32. Do you try to find out the causes of worries and fears in your students?</td>
</tr>
<tr>
<td></td>
<td>33. Do you assume guidance responsibilities toward every pupil in your classes?</td>
</tr>
<tr>
<td></td>
<td>34. Do you learn about the special interests and hobbies of your pupils?</td>
</tr>
<tr>
<td></td>
<td>Column</td>
</tr>
<tr>
<td>---</td>
<td>----------</td>
</tr>
<tr>
<td>35.</td>
<td>Do you find out about the educational and vocational plans of your students?</td>
</tr>
<tr>
<td>36.</td>
<td>Do you add pertinent information which you acquire about your students to the permanent records?</td>
</tr>
<tr>
<td>37.</td>
<td>Do you make use of test scores, evaluations, and diagnostic material about your students?</td>
</tr>
<tr>
<td>38.</td>
<td>Do you discuss occupational information in your classes or with individual pupils?</td>
</tr>
<tr>
<td>39.</td>
<td>Do you point out the relationship between the subjects you teach and various occupations?</td>
</tr>
<tr>
<td>40.</td>
<td>Do you have conferences with other teachers about &quot;problem students&quot;?</td>
</tr>
<tr>
<td>41.</td>
<td>Is the deportment of students in your classes good?</td>
</tr>
<tr>
<td>42.</td>
<td>Do you give the same assignment to all the pupils in your classes?</td>
</tr>
<tr>
<td>43.</td>
<td>Do you try to find out parental attitudes toward the children in your classes?</td>
</tr>
<tr>
<td>44.</td>
<td>Do you discipline students in front of the class?</td>
</tr>
<tr>
<td>45.</td>
<td>Do your students appear to be highly motivated in your classes?</td>
</tr>
<tr>
<td>46.</td>
<td>Do you object to finding out how your pupils feel about you?</td>
</tr>
<tr>
<td>47.</td>
<td>Do you make sure your students understand what you expect of them?</td>
</tr>
<tr>
<td>49.</td>
<td>Do your pupils freely admit mistakes and misdeeds?</td>
</tr>
<tr>
<td>50.</td>
<td>Do your pupils seem pleased when they meet you outside of school?</td>
</tr>
</tbody>
</table>
EXPLANATION AND DIRECTIONS:

The following multiple-choice "questions" are made up from the anonymous responses of students in Psychology 407. For each "question" there are five possible responses. These responses have been chosen with great care so as to include a complete range of attitudes. Thus, for each "question" you can express an attitude ranging from distinctly favorable to distinctly unfavorable.

Probably no course is all good or all bad. In order to get a complete picture of the good and bad points, it is necessary to have a number of "questions". Some of these "questions" appear to be quite similar. However, they actually represent different aspects of the values, methods, etc., of the course.

In order to get an honest and complete picture of Psychology 407, it is necessary that you do not allow your reaction to one aspect of the course to generalize to all the "questions". Answer each "question" as honestly as you can.

CONCENTRATE ON EACH "QUESTION" AS YOU COME TO IT. For each "question" pick the one response that comes the closest to expressing your true reaction. The only "true" answer to any "question" is the way you honestly feel.

This REACTION SURVEY has absolutely nothing to do with your grade in Psychology 407. It will never become a part of your records. Your instructor will never know which answer sheet is yours unless you tell him of your own free will; he will not ask you. This instrument is given for the purpose of evaluating the course.

Score________________

MALE____ FEMALE_____

CLASS RANK: I____ II____ III____ IV____ SPECIAL____

I AM AN EDUCATION MAJOR_____

I AM NOT AN EDUCATION MAJOR____
PSYCHOLOGY 407
STUDENT REACTION SURVEY
(number ____)

DIRECTIONS: For each statement, check the response which comes closest to describing the way you really feel. There are no "right" or "wrong answers—the only correct answer is the way you feel. Please check each statement.

1. Teachers (should) (should not) study Psych. 407 because
   a. it is alright.
   b. it does give some insight into educational procedure.
   c. they have to. It is a part of their training.
   d. it should be helpful to them in their work.
   e. if even some of what is learned were applied, it would aid the future mental and physical development of all people.

2. Lectures in Psych. 407
   a. were not interesting.
   b. were long enough.
   c. were useful in that they served as guidance for group discussions.
   d. were useful, interesting, and well presented.
   e. were really not too important.

3. The Psych. 407 instructor
   a. was friendly, informal, and made us feel as if we were wanted and needed in that class.
   b. was alright.
   c. was likeable and well informed on the topic, but rather poor in putting it over.
   d. was a pretty good discussion leader and a "good guy."
   e. should have had better rapport with the students and not always tell them what to do.

4. Psych. 407 should
   a. be more realistic and enthusiastic.
   b. be required of more students, even those who are not in the teaching field.
   c. be applied by teachers.
   d. be dropped from the curriculum.
   e. probably be somewhat useful to future teachers.

5. Group discussions in Psych. 407
   a. were average.
   b. are very helpful if they follow the lesson.
   c. could be more meaningful.
   d. were the best method of learning.
   e. were of little or no help.
6. I wish that Psych. 407
a. had been presented a little more broadly although what we had was good.
b. should be continued.
c. could be two quarters long so we could get more of everything.
d. would go into the material a little more intensively than we seemed to get into it.
e. could really be applied in our schools, but it mostly can't.

7. In regard to Psych. 407 I like
a. nothing very much.
b. the social atmosphere produced by working in groups and learning names.
c. the friendly atmosphere and knowing everyone, the valuable things we learned, and the group projects—everything about the course.
d. the informality, but it may have kept us from learning as much as we should have.
e. group discussions—up to a limit.

8. When I think of Psych. 407 and teaching
a. I think of 407 as a "must" in preparation for teaching.
b. I realize they are both related.
c. I wish that more practical applications had been stressed in the course.
d. I think the course could be a help to those in teaching if only it were to be taught with better objectives and more common sense.
e. I think Psych. 407 helps in getting ideas about teaching and teaching situations.

9. Psychology 407
a. is a very useful course to anyone planning on going into teaching, or for anyone who wants to study and understand children.
b. is a little more interesting than most courses.
c. really tries, but could be improved by stressing application of fact.
d. is for future teachers.
e. is a useless course to me.

10. Psych. 407 has taught me
a. very little.
b. enough.
c. very little in terms of psychology.
d. quite a lot in regard not only to education in schools, but also in regard to the learning process in life as a whole.
e. some of the basic problems to expect to encounter while teaching, and a fair bit about how to solve them.
11. The objectives of Psych. 407
   a. were adequate.
   b. were non-existent.
   c. were more clearly stated than usual.
   d. were somewhat inappropriate.
   e. were clearly defined and well chosen.

12. Practically speaking, Psych. 407
   a. is just another Education course.
   b. is an excellent course for future teachers.
   c. may be beneficial some day.
   d. is too theoretical and very impractical.
   e. is a good course, better than average.

13. Psych. 407 contributes to the understanding of children
   a. somewhat. Not too much.
   b. practically nothing.
   c. probably more than the average of Psychology of Education courses.
   d. more in some phases than in others.
   e. more than any other course.

14. In comparison to Education courses, Psych. 407
   a. does not create as much educational experience.
   b. is the most helpful and interesting.
   c. is better developed and more interesting.
   d. is very nearly the same.
   e. is not necessary.

15. In terms of actual use, Psych. 407
   a. may or may not be usable.
   b. can be applied later when we begin to teach.
   c. seems almost fictional instead of practical.
   d. is not very valuable, but gives some things.
   e. is a very practical course, even for those who will not be teachers.

16. The "atmosphere" in Psych. 407
   a. is pleasant although many are bored.
   b. is a typical classroom atmosphere.
   c. is very fine. I enjoy being treated as a person with a mind and brain of my own.
   d. is relatively pleasant as compared with other courses.
   e. is sleepy and stuffy.

17. Cooperative work in Psych. 407
   a. is attempted, but is not working so well.
   b. is the best, and most useful way to have a class.
   c. sometimes wastes too much time, but often is of value.
   d. leads to nothing but big "parties" every day.
   e. helps keep interest, and learning, above average.

18. The way Psych. 407 is taught in my section
   a. is rather confusing at times.
   b. is commendable.
   c. is different from what I've been used to.
   d. is very much liked, and has increased desire to learn.
   e. just has me going around in circles.
19. In relation to real teaching, Psych. 407
   a. is one of the best courses for that field.
   b. will very likely be forgotten by the time I'm going to teach
   c. deals with some teaching problems, but only superficially.
   d. helps you to realize some problems which will be facing you.
   e. is of value for some things, but not for others.

20. In regard to problems of dealing with children, Psych. 407
   a. gives some ideas, but I question how much is practical.
   b. helps us tremendously in understanding why children do what
      they do.
   c. points out some good methods.
   d. could be a little more extensive, but it helps somewhat.
   e. beats around the bush. Nothing definite is said.

21. Psych. 407 needs
   a. only minor changes.
   b. more to it; more application.
   c. nothing. It suits me fine just as it is.
   d. something to it—anything!
   e. some things changed, and others left as they are now.

22. In regard to application of principles, Psych. 407
   a. is not as beneficial as it could be.
   b. is average.
   c. is greatly lacking.
   d. does a good job.
   e. is an ideal course.

23. Regarding the problems of teachers, Psych. 407 contributes
   a. more than average.
   b. immensely to ironing out problems we must face.
   c. some worthwhile information, but it doesn't get right
      down into real teaching situations.
   d. to some degree.
   e. little, if anything.

24. In comparison to college courses in general, Psych. 407
   a. is better. You're not bored.
   b. is almost a waste of time.
   c. does not hold my interest to the same extent.
   d. is a relief! Interesting and informative!
   e. is better than some, worse than others.

25. For those who are going to be teachers, Psych. 407
   a. is an excellent course.
   b. has little or no value.
   c. duplicates materials learned elsewhere.
   d. may or may not be useful.
   e. is profitable.
I, John Paul Smith, was born at Vernal, Utah October 21, 1922. Public school attendance was in Longview, Washington where I graduated in 1941. A year later I attended Western Washington College at Bellingham, Washington. Beginning in 1943 there was a period of United States Navy V-12 and V-5 training at Dickinson State Teachers College, St. Olaf's College, and The State University of Iowa.

Following military service I returned to Western Washington College and was graduated with the degree Bachelor of Arts in June, 1948. A year of public school teaching near Monroe, Oregon followed. In 1950 I entered The Ohio State University, and received the degree Doctor of Philosophy in August, 1954. While at The Ohio State University I was employed as Graduate Assistant, Teaching Assistant, and Assistant Instructor by the Department of Psychology, and as Student Counselor at the Occupational Opportunities Services.