NN RABIDEAU

Ph. D.

CHERYL ANN RABIDEAU

Ph. D.

Ph. D.

CHERYL ANN RABIDEAU

A DEVELOPMENTAL STUDY OF TEACHERS' ABILITY TO IDENTIFY AND WRITE PERFORMANCE OBJECTIVES

Dissertation for the Degree of Ph. D.
MICHIGAN STATE UNIVERSITY
CHERYL ANN RABIDEAU
1973

This is to certify that the

thesis entitled

A DEVELOPMENTAL STUDY OF
TEACHER' ABILITY TO IDENTIFY AND
WRITE PERFORMANCE OBJECTIVES

presented by

CHERYL ANN RABIDEAU

has been accepted towards fulfillment
of the requirements for

Ph. D. degree in Education

Major professor

Date 11/7/73

O-7639

12

050

85

T-065

1

ABSTRACT

A DEVELOPMENTAL STUDY OF TEACHERS' ABILITY TO IDENTIFY AND WRITE PERFORMANCE OBJECTIVES

By

Cheryl Ann Rabideau

There is much emphasis today on the use of performance objectives in curriculum development and evaluation. The utilization of such objectives in classroom activities creates a new pre-service and in-service need. If teachers are expected to use performance objectives to their maximum benefit they must be instructed in the identification and development of properly stated performance objectives. In addition, there must be some means of evaluating whether one can identify and write performance objectives. At the present time there is no instrument available to assess this skill.

This study was therefore concerned with developing and validating an instrument to provide an estimate of one's ability to identify and write performance objectives. Answers to the following research questions were sought:

1. Is the test developed a reliable measure of whether or not teachers and teachers-in-training can identify and write performance objectives?
2. Is the test developed a valid measure of whether or not teachers and teachers-in-training can identify and write performance objectives?

3. Do teachers in the field teaching score significantly higher at the .05 level of confidence on the first administration of a test concerned with performance objectives than teachers-in-training?
4. Do teachers and teachers-in-training who state that they have received prior instruction in performance objectives score significantly higher at the .05 level of confidence on the first administration of the test than those who have received no instruction?
5. Do teachers and teachers-in-training score significantly higher at the .05 level of confidence on the second administration of a test concerned with writing performance objectives after formalized instruction?

Once the instrument was developed, it was administered at least twice to four different groups of teachers or teachers-in-training in the state of Michigan. The same form of the test was administered each time, with a six week lapse in between each session. The test - retest method was used to investigate the reliability of the instrument. Content validity was established through an analysis of course content and review by an authority in the field of performance objectives. For research questions III and IV, a t-test for two independent samples was used to compute the analysis of variance. A t-test for two related samples was used to compute the gains score analysis of research question V.

Within the limitations of the study, the following conclusions seem reasonable based on the findings:

1. The instrument developed to measure whether teachers and teachers-in-training can write performance objectives indicates a positive attitude toward reliability. At this point it is impossible to state that the test is a reliable instrument because content validity has not been tested as yet. Repeated testing of the instrument, however, does yield consistent results.
2. Based upon a thorough analysis of course content related to performance objectives and review by an authority in the field, the instrument developed appears to be both reliable and valid in terms of content validity.
3. Teachers in the field do not score significantly higher at the .05 level of confidence than teachers-in-training on the first administration of a test concerned with performance objectives.
4. Teachers who have received prior instruction in performance objectives do score significantly higher at the .05 level of confidence on the first administration of the test, than do those teachers who have received no prior instruction. Teachers-in-training who have received prior instruction, do not score higher on the first administration of the test, than do those teachers-in-training who have received no prior instruction.
5. Both teachers and teachers-in-training scored significantly higher at the .05 level of confidence on the second administration of the test, after receiving formalized instruction.

Literature in the area of performance objectives has shown us that teachers need specialized training in performance objectives. The development of this instrument and its initial testing verify the need for specialized training, and suggests ways of instituting the performance objectives thrust in our educational systems today.

A DEVELOPMENTAL STUDY OF TEACHERS' ABILITY TO IDENTIFY AND WRITE PERFORMANCE OBJECTIVES

By

Cheryl Ann Rabideau

A DISSERTATION

Submitted to
Michigan State University
in partial fulfillment of the requirements
for the degree of

DOCTOR OF PHILOSOPHY

College of Education

1973

ACKNOWLEDGMENTS

For their guidance, time, and assistance, I thank my committee chairman Dr. Lawrence Borosage, and committee members, Dr. Norma Bobbitt, Dr. James Page, and Dr. Robert Poland.

For sharing their knowledge and expertise in the area of testing and statistical design, I thank Dr. Maryellen McSweeney, Associate Professor, Counseling and Personnel Services, Michigan State University and Dr. Willard Warrington, Director of Evaluation Services, University College, Michigan State University. In the area of performance based instruction, special thanks goes to Dr. Stephen Yelon, Assistant Director Learning Services, Michigan State University for his encouragement and assistance.

I sincerely appreciated the cooperation of Dr. Daniel Brown, Miss Jan Danford, and Dr. Walter Hapkiewicz who permitted the instrument to be administered to their students or faculty.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

CHAPTER I

OVERVIEW OF THE PROBLEM

Introduction

There is much emphasis today on the use of performance objectives in curriculum development and evaluation. As in many other activities, the teacher that is involved in developing or modifying these objectives to meet the needs of his program, is more likely to make the maximum effort in helping his students reach these objectives. The utilization of such objectives in classroom activities creates a new preservice and inservice need. If teacher are expected to use performance objectives to their maximum benefit they must be instructed in the identification and development of properly stated performance objectives.

The Problem

The purpose of this study was to: (1) develop an instrument designed to provide an estimate of one's ability to identify and write performance objectives; and (2) validate the instrument among four different groups of teachers or teachers-in-training in the state of Michigan.

Need for the Study

For many years the educational community has been involved in preparing academic goals as a tool in citing learning outcomes.

These goals have been used as an aid to planning curricula, teaching strategies and course outlines. The idea of performance objectives, with an agreed upon frame of reference, is however a new concept. Although performance objectives have been successfully employed for a number of years by various branches of Armed Services, business and industry, in the academic world there is still considerable confusion over what constitutes a performance objective, how it is developed or written, and how it might be used.

The need and interest in performance objectives can be seen across the United States. The Southern Association of Colleges and Schools (1973) is in the process of developing an interstate consortium which would be responsible for producing performance objectives and criterion measures in occupational education. The following list of states have been invited to participate in the initial planning stages.

Alabama	Missouri
Colorado	North Carolina
Florida	Ohio
Georgia	Oklahoma
Kentucky	South Carolina
Louisiana	Tennessee
Michigan	Texas
Mississippi	Virginia

At the present time the state of Michigan is in the process of implementing a major thrust for the use of performance objectives in all curricula. Both the United States Office of Education and the Michigan Department of Education have very recently been requiring that schools applying for categorical financial support state their plans in terms of performance objectives. In the state of Michigan, performance objectives are seen not as an entity unto themselves,

but as an important facet of a total accountability model. Briefly, this accountability model, which is explained in Chapter II, includes the need for common goals of education, development of performance objectives, assessment of needs, analysis of teaching techniques, and provisions for outside audits to determine if change has indeed taken place, in addition to providing guaranteed inservice professional development.

In the area of general education a Grade Level Commission has been developed for each grade K-12. Objectives for each academic area have been written and evaluated by teachers, teacher-educators, administrators, parents, and students. In the coming academic year (1973-74), these objectives will be field tested and revised.

The Vocational Education and Career Development Service of the Michigan Department of Education has further stated that by September 1974 every vocational program receiving reimbursement will be responsible for submitting performance objectives for each program subsidized. As part of the master plan for developing performance objectives in Vocational Education, the Vocational Education and Career Development Service has inserviced over 300 vocational instructors in the philosophy and writing of performance objectives. When objectives have been written and validated for each vocational area, local teachers will have the option of: (1) accepting and using the objectives as written for their vocational area; or (2) accepting the objectives, but making additions of their choice; or (3) rejecting the objectives as written, and submitting their own objectives for approval to the Vocational Education and Career

Development Service. All of the above mentioned plans for the development and utilization of objectives demand that teachers are able to identify and/or write an objective and determine its appropriateness for the respective program or grade level.

Farr (1969) pointed to the teacher need for training in the development and use of behavioral objectives.* He believed this training must take place before teachers could select appropriate measuring instruments, materials or procedures that would be fundamental to evaluating the growth of students and/or programs. Glaser (1967), another proponent of objectives, believed that the analysis and specification of objectives and learning outcomes is the most important factor in improving any educational program. Many other authors have discussed the significance and role of performance objectives, in addition, suggestions have been given for educating the teacher in developing performance objectives. Few authors have cited ways to measure this knowledge. Since no instrument was available to assess this skill, this study is therefore concerned with developing and validating an instrument designed to provide an estimate of one's ability to identify and write performance objectives.

---

*For purposes of reviewing literature, the following terms are used synonymously with performance objectives: goals, behavioral objectives, educational objectives, enabling objectives, terminal objectives, training objectives, and instructional objectives.

Research Questions to be Answered

The questions which this study attempted to answer follow:

1. Is the test developed a reliable measure of whether or not teachers and teachers-in-training can identify and write performance objectives?

2. Is the test developed a valid measure of whether or not teachers and teachers-in-training can identify and write performance objectives?

3. Do teachers in the field teaching score significantly higher at the .05 level of confidence on the first administration of a test concerned with performance objectives than teachers-in-training?

4. Do teachers and teachers-in-training who state that they have received prior instruction in performance objectives score significantly higher at the .05 level of confidence on the first administration of the test than those who have received no instruction?

5. Do teachers and teachers-in-training score significantly higher at the .05 level of confidence on the second administration of a test concerned with writing performance objectives after formalized instruction?

Definition of Terms

For purposes of this study, the terms are defined as follows:

Elements--the component parts of a performance objective. Test items pertaining to this aspect of the test requested that the participant name, define and select the component parts of an objective.

Identification--recognition and selection of a performance objective. Test items pertaining to this aspect of the test requested that the participant recognize and select those statements written in performance terms. Participants were also asked to identify the appropriate domain of stated objectives.

Performance objective--a statement of what the learner is like or able to do when he has successfully completed the learning experience. Literature reveals a variety of other terms which refer to performance objectives as defined by this study. The following terms have been used synonymously with performance objectives: goals, behavioral objectives, educational objectives, enabling objectives, terminal objectives, training objectives, and instructional objectives.

Reliability--as applied to educational instruments, reliability may be defined as the level of consistency of the measuring device. This consistency reflects the degree to which the test may be considered stable or may be depended upon to yield similar test results (Borg, 1963, p. 84).

Teacher--one presently possessing an elementary or secondary teaching certificate and/or vocational certificate. This person is presently teaching in an elementary or secondary school or vocational center; or has recently completed at least one year's experience the previous academic year at one of the above schools.

Teacher-in-training--one who is presently enrolled in a College of Education and has the intended professional goal of teacher.

Validity--as applied to educational instruments, validity may be defined as the degree to which a test measures what it claims to measure (Borg, 1963, p. 80).

Writing--composing and listing performance objectives. Test items pertaining to this aspect of the test requested the participant to rewrite and compose sentences in performance terms.

Delimitations

1. The population tested was limited to four groups of teachers or teachers-in-training in Michigan.
2. The testing instrument, which was developed by the researcher, was operational only as defined.
3. Subject matter content was not considered in the administration or grading of the instrument.

Limitations

1. The majority of the population tested consisted of vocational instructors, and did not include other school functionaries.
2. Educational background of the population varied from high school graduate to Ph. D. degree within and among the different groups tested.
3. The test was taken on a voluntary basis. It is assumed that each participant worked to his best ability during the time limit established.

Study Procedure

1. A review of literature was conducted in the areas of goals and objectives etc., testing; accountability and evaluation; teaching technology; and curriculum planning.

2. A test was researched, developed, pre-tested, modified and administered two or three times to the various groups.

3. Background information was gathered from the participants in the following areas: occupation, whether or not previous instruction in performance objectives had been received, and the nature of the instruction.

4. The test was administered at least twice to four different groups of teachers in the state of Michigan.

a. Graduate students at Wayne State University - Detroit, Michigan (June, 1972). Sample size - twenty participants.

b. Conference participants at the Career Education Conference in Grand Rapids, Michigan (August, 1972). Sample size - fourteen participants.

c. Graduate and undergraduate students at Michigan State University - East Lansing, Michigan (October, 1972). Sample size - nineteen participants.

d. Faculty members of the Capitol Area Career Center - Mason, Michigan (December, 1972). Sample size - thirty faculty participants.

5. The resulting data was tabulated, analyzed, and interpreted.

6. Conclusions and recommendations were drawn.

Overview of the Chapters

Chapter II provides a review of related research in the areas of: goals and objectives; testing; accountability and evaluation; teaching technology; and curriculum planning.

Chapter III discusses the procedures utilized in the investigation by examining: the development of the test (items, test

form, answer sheet); selection of the study population; description of the study population; and collection of data.

In Chapter IV derived statistics for testing the research questions are presented and a summary made of the results.

Chapter V includes a summary of the investigation; conclusions; implications; and recommendations for further research.

CHAPTER II

REVIEW OF RELATED RESEARCH

The related research is presented in six categories: (1) the role of objectives in accountability and evaluation; (2) definition and composition of an objective; (3) history of objectives; (4) impact of objectives; (5) objectives and the behavioral domains; and (6) questioning the validity of performance objectives.

Objectives in Accountability and Evaluation

Accountability has a historical frame of reference found in Ontario, Canada from 1876 to 1882. Sciara and Jantz (1972) give the following account.

> During those years, payments to high schools were largely dependent on the number of students who passed an intermediate exam after a year or two of attendance. Although standards were raised according to the adopted criterion, this practice was abandoned in 1883 after a protest against the sacrifice of all other educational values for the attainment of this goal (p. 6).

The demand for accountability in education has been growing rapidly in the past decade. According to Wickline (1971) people became concerned when a large percentage of the draftees were rejected because they were functionally illiterate. People began to question whether schools were really doing their job. As a result of such inquiry, the following types of evaluation arose; the National Assessment Program which gives some idea of the status of schools and whether or not progress is being made; Title I program evaluation,

which includes appropriate objective measurement at least once a year. Today words such as performance contracting, audit, goal, performance objective, and accountability are familiar vocabulary to many administrators, teachers, and even students.

Throughout the United States performance objectives are playing an integral role in evaluation of education. In the state of Michigan, the Department of Education has developed an overall accountability model in public education. John W. Porter, Superintendent of Public Instruction identified the six general categories; (Michigan Department of Education-Developing Performance Objectives, undated).

1. Identification, discussion and dissemination of common goals for Michigan Education.

2. Approaches to educational challenges based on performance objectives consistent with these goals.

3. Assessment of educational needs not being met, and which must be met to achieve performance objectives and goals.

4. Analysis of the existing (or planned) educational delivery system in light of what assessment tells us.

5. Evaluation and testing within the new or existing delivery system to make sure it serves the assessed needs.

6. Recommendations for improvement based upon the above (p. 1).

Performance objectives play either a direct or indirect role in achieving the goals of this accountability model.

State departments of education are not the only ones to become involved in performance objectives. Many college instructors, teachers,

administrators and teacher training institutions have recently been involved in developing objectives for their needs.

If curriculum program evaluation is to be relevant, it must contain a clear explanation of the behaviors which are being measured. Ammons (1962) supports this belief in the statement that educational objectives benefit the classroom teacher in the following: (1) "in selecting activities appropriate to the achievement of the objective; (2) in selecting evaluation techniques suitable for assessing both student progress toward the objective and the general quality of the program (p. 433)." McAshan (1970) concurs that writing behavioral objectives provides educators with a guide to the evaluation of programs and also to the intended processes of instruction. Mazur (1969) who believes objectives are fundamental to the evaluation process, emphasized the role of objectives with the following statement:

> The adequacy with which objectives are stated is a critical factor in determining the quality of the information derived from evaluation. The presence of an assessable objective provides a foundation on which to build a systematic evaluation which in turn, would provide information that will be useful to administrators and project managers in both facilitating and improving decision making (p. 49).

Tyler (1938) who has been a proponent of objectives and evaluation through the years believes testing should measure the extent to which program objectives are being reached. Testing based on behavioral objectives should provide information that will aid in improving the instructional process. Many years later Tyler (1951) suggested that the teacher should provide the learner with the opportunity to demonstrate ability by writing many test items that measure the

attainment of the particular objective. Engman (1968) agreed with the need for teachers to develop learning experiences around specific course objectives. Consalvo (1969) too believed that performance objectives are a prerequisite for valid assessment.

The road to specifically stated performance objectives has been long in the making. Four instructional movements have been intricately involved in the growth of such objectives. Tyler (1938, 1950, 1951) and his associates were some of the earliest researchers in this area. Their basic interest was in developing goals of education that would be relevant to the teacher. As a result of this effort, many educators began to describe objectives in terms of student performance. The second movement was spearheaded by the Mid-Century Committee on Outcomes in Elementary School. Kearney (1953) reported that the task of this group was to describe the measurable goals of instruction in American elementary schools for educators, test-makers, and interested citizens. The second movement also consisted of a Survey Study of Behavioral Outcomes of General Education in High School (French, 1957). The purpose of this study was to describe the objectives of general education in American secondary education for all educators. A third movement started about a decade ago. This movement resulted from the Armed Services' need to prepare people to operate and maintain large, complex military weapons systems. Robert B. Miller (1953, 1962) developed procedures for job task analyses. Tasks and skill performances represented the behavioral requirements. The fourth movement is denoted by the concept of programmed instruction. Writers of instructional programs demanded specific guidance on instructional objectives. (Mager, 1961;

Gagne, 1963; Mager, 1962; and Miller, 1962) agree that in reference to programmed instruction, the more specific the objectives, the more easily they can be transformed into instructional materials. All three educators agreed that behavior must be precisely described with the level of performance stated for recognition of successful student performance.

Definition and Composition of an Objective

With so many people writing and discussing objectives, it would seem feasible that there might be as many definitions of the term "objective" as authors of the subject. In-as-much as objectives do come under a variety of titles (behavioral, performance, terminal, enabling etc.), this is sometimes the case. Since the 1960's however, proponents of behavioral objectives have, despite their differences, developed some common bonds.

Both Huffman (1973, p. 26) and Byers (undated, p. 3) define a performance objective as an "educational objective that clearly states observable and measurable performance and that identifies for the student and teacher the conditions under which the events or steps in the learning will take place". Kibler, Barker, & Miles (1970) and Cohen (1970) have similar definitions. Kibler et al., believe "Behavioral objectives are statements which describe what students will be able to do after completing a prescribed unit of instruction (p. 1)." Cohen, similarly believes "An objective is a specific observable student action or product of student action (p. 6)." Bernabei and Leles (1970) have a similar definition. "Objectives

are desired outcomes toward which effort or behavior is directed or aimed with a definite purpose in mind (p. 1)."

According to McAshan (1970) a performance objective is "any specifically stated objective that identifies a goal and specifies some type of performance, instrumentation, or evaluation strategy that will furnish evidence that the intended outcome of the goal has or has not been achieved (p. 15)." The Vocational Education and Career Development Service of the Michigan Department of Education defines performance objective as a "communication device which provides a precise description of a testing (criterion) situation (Bailey, Bland, Brown, 1972, p. 1)." Although each one is an extension of modification of Robert Mager's (1962) early definition.

> An objective is an intent communicated by a statement describing a proposed change in a learner--a statement of what the learner is to be like when he has successfully completed a learning experience. It is a description of a pattern of behavior (performance) we want the learner to be able to demonstrate (p. 3).

In much the same way authors modeled Mager's <u>definition</u> of performance objective, <u>component parts</u> of a performance objective too have a similarity. Mager (1962) gave us three basic component parts: (1) Conditions (2) Behavior (3) Criterion. Conditions refer to relevant materials, supplies, problem, or situation. Behavior refers to the verb, or what is to be accomplished. Criterion refers to the level of proficiency (time constraints, quality statements, or percentages). Most proponents of behavioral objectives have either accepted Mager's component parts "as is" or have made further additions or refinements. Kibler et al., (1970), Bernabei and

Leles (1970), Cohen (1970), Williams (1973) and Vogler (1973) are just a few proponents who accept the components with no modifications.

Byers (undated) includes the following components:

A. Givens: people, objects, information
B. Sources: locations, records, activities
C. Purposes (to do something)
D. Methods: following, developing, or refining a sequence
E. Outputs: documents, interaction, intangibles
F. Quality measure or error tolerance
G. Time limit or priority rating
H. Prerequisite: ability to learn task (p. 2).

The Michigan Department of Education - Developing Performance Objectives (undated) has developed the following elements:

1. The performer. The individual or individuals who will be involved in the instrucational task. This might be a single student, an entire class or school, or even the entire state. This variable is called WHO.

2. The behavior to be demonstrated. What it is the performer is to do - complete, comprehend, leap, construct, etc., etc. This is the HOW variable.

3. The object of the behavior may be characterized as WHAT variable. In other words, are we specifying electronics, French, mathematics or composition?

4. The element of time will establish the essential of WHEN. This might be expressed as a future date, number of days or months or even in terms of necessary prerequisite to another level or phase.

5. HOW MEASURED provides data as to the techniques to be employed to verify that the objective has been met. This might be a normative instrument, a teacher-made test or an observational check list.

6. HOW WELL is the criterion for success relative to the objective. This is the element of proficiency or degree of accomplishment (p. 7).

The two previously cited examples have taken the Mager elements and made some additions. The basic components of conditions, behavior, and criteria are included.

History of Objectives

Just as evaluation is rich in tradition, so too, is the history of objectives. Concealed under many guises, literature dealing with objectives may be identified as: performance objectives, behavioral objective, instructional objectives, and educational goal. Franklin Bobbitt, who has been called "the father of curriculum theory" was one of the earliest proponents of objectives. Bobbitt (1918) stated:

> . . . education that prepares for life is one that prepares definately for specific activities. However, numerous and diverse they may be for any social class, they can be discovered. This requires that one discover the particulars of which these affairs consist. These will be numerous, definite, and particularized . . . The curriculum will then be that series of experiences which childhood and youth must have by way of attaining these objectives (p. 42).

Bobbitt (1924) listed objectives needed in various phases of education. "Ability to use language in all ways required for proper and effective participation in community life (p. 11)." "Ability to utilize music for a healthful, abundant, and varied awakening of one's emotional nature (p. 19)." Although not listed in behavioral terms, these goals or objectives were the rudiments of today's behavioral objectives.

During the 1920's several attempts were made to develop objectives in the area of general education. Billings (1921) developed

888 objectives for the teaching of social studies. Pendleton (1924) developed 1,581 objectives for English instruction and Guiler (1926) developed 300 objectives for arithmetic. Although the basic premise on which these objectives were written had merit, the large number of objectives tended to frighten and discourage teachers. Without training in the writing and utilization of objectives, this effort was temporarily stifled. A revival of interest in objectives came about in the 1940's and '50's along with the interest in evaluation.

Impact of Objectives

Behavioral objectives involve all people in the teaching-learning process, this includes students, teachers, school boards, administrators and parents. Kibler et al., (1970) in discussing how objectives affect students has written: "By being given behavioral objectives, students do not have to guess what is expected of them in the learning setting. Learners may spend their time acquiring behaviors specified by the teacher rather than attempting to infer what the teacher expects of them (p. 106)." A study by Doty (1968) tested a hypothesis suggested by the American Institute for Research that prior knowledge of educational objectives affects the practice and performance of students. The results of this study indicated that students' knowledge of educational objectives before study of a unit increased the efficiency of student learning. Miles, Kibler, and Pettigrew (1967) similarily found that when students are given specific behavioral objectives for a course, they tend to score better on an objective test than when they are not aware of specific objectives. Bryant (1970) researched a similar area to determine

whether or not stating course objectives in behavioral terms had a significant effect on the achievement of students. He concluded that pupils taught by teachers trained in the use and development of behavioral objectives performed better on the criterion measure. He also discovered that providing students with the objectives improved their understanding of what was expected of them. Ojemann (1969) believes that students may lack understanding of course material because of misdirected learning experiences, inappropriate evaluative measures, and confusion over what is expected. He believes ambiguity can be avoided if curriculum objectives are expressed in specific behavioral terms. Kibler et al., (1970) states another benefit of utilizing behavioral objectives.

> It is the sense of security a student experiences when he knows what specifically is expected from him in a course and the conditions under which he will be expected to exhibit his competencies. Psychologists suggest that generalized fears cause greater emotional anxiety than specific well-defined fears. Behavioral objectives can help students understand specific requirements of a course and also reduce the amount generalized anxiety about course requirements (p. 106).

Teacher training--the advantages of performance objectives have been discussed, yet without proper instruction in the development and utilization of such objectives, the possible benefits will be minimized or non-existant. According to Mager (1962) "when clearly defined goals (or performance objectives) are lacking, it is impossible to evaluate a course or program efficiently, and there is no sound basis for selecting appropriate materials, content, or instructional methods (p. 3)." Popham and Baker (1970) reinforce this belief, but point out what has been happening in many schools:

"Teachers have always been concerned with the importance of instructional objectives, yet the kinds of objectives which they have endorsed usually made little difference in the nature of their instructional programs. The principal reason for this is that these objectives were stated in terms too broad and ambiguous to allow any one to agree upon what the objectives meant (p. 23)."

Sullivan (1971) a division head for the Southwest Regional Laboratory for Educational Research, believes that despite verbal commitment of many educators to instructional objectives, precise objectives are not commonly employed in major efforts to plan, evaluate, and improve classroom instruction. The reason stated for this behavior is obvious: "Teachers in general have neither the time nor the training to design and develop objectives-based programs of instruction for their own use, and such programs have not been provided for them by other agencies (p. 55).

Nerbovig (1956) researched teachers' knowledge of objectives in regard to awareness and utilization. He found the major function to be performed by objectives in the teaching-planning activities, was least considered by experienced teachers. In contrast, when performance objectives were used with student teachers in an experimental study by Moffett (1966), the following results were discovered: (1) Goals of instruction were more readily achieved by pupils of student teachers in the experimental groups, (2) The supervisor was considered more helpful by the experimental group teachers. Lapp (1970) conducted a study which determined the ability of elementary teachers to write performance objectives. Results

revealed that only eight percent of the total population of teachers achieved satisfactory criterion level performance. Those with one to ten years of teaching experience scored higher than those with more than ten years experience.

Gilpin (1962) believes educators have many ideas on preparing behavioral objectives, yet little has been done to prepare teachers to utilize objectives in curriculum development. He believes the following three questions must be answered if a teacher is to write worthwhile objectives:

1. What is it that we must teach?
2. How will we know when we have taught it?
3. What materials and procedures will work best to teach what we wish to teach (p. viii)?

Baker (1967) attempted to compare the effect behavioral and non-behavioral objectives have on learning. The results showed no significant differences on mean test scores. Baker stated this may have been because of the teacher's inability to discriminate items that related to specific objectives. He also felt this may have been because of the teacher's inability to discriminate items that related to specific objectives. He also felt this may have been due to the teacher's lack of motivation to promote high pupil performance. Baker implies a need for training in the use of performance objectives. Popham and Baker (1970) agreed that although everyone may be talking about behavioral objectives, teachers still do not know how to utilize them in classroom planning. McAsham (1970) stated that:

> Much in-service training time is necessary to teach school administrators, staff members, and teachers how to write objectives in their special areas. This also requires time for cooperative planning. Without the in-service training and cooperative planning time, the results obtained by the

> teaching teams may be mediocre at best. And any program that is based on mediocre program objectives will produce results and educational products that may be classified by the same name (p. 9).

The research concerning the teacher and performance objectives suggests a need for training in the development and use of objectives before the optimum results can be realized. According to Kibler et al., (1970), the teacher who utilizes objectives in curriculum planning and evaluation is the teacher who is confident

> 1) that the subject matter being presented is of prime importance and 2) that measurement of achievement is efficient and appropriate to course goals, is more secure in his position and, consequently, is usually more satisfied with his professional contribution (p. 107).

Objectives and the Behavioral Domains

Benjamin Bloom developed a Taxonomy of Educational Objectives. This work divided behavioral objectives into three domains: cognitive, psychomotor and affective. The cognitive domain includes those objectives which deal with the recall or recognition of knowledge and the development of intellectual abilities and skills. Psychomotor deals with the student's physical ability to perform a skill. The affective domain is concerned with the student's character traits and willingness to perform. It includes objectives which "describe changes in interest, attitudes, and values, and the development of appreciation and adequate adjustment. Bloom (1956) believes the following about objectives in the affective domain.

> Objectives in this domain are not stated very precisely; and, in fact, teachers do not appear to be very clear about the learning experiences which are appropriate to these objectives. It is difficult to describe the behaviors appropriate

> to these objectives since the internal or covert feelings and emotions are as significant for this domain as are the overt behavioral manifestations. Then, too, our testing procedures for the affective domain are still in the most primitive stages (p. 107).

Although objectives written for this domain are considered difficult to develop and often receive criticism, several authors have offered suggestion to alleviate these problems. Ridenour (1971) reported on work completed by an ad hoc committee of Future Farmers of America. This group identified performance objectives on student personal growth. Their work investigated the areas of leadership, communications, citizenship, service to others, social skills, management of financial resources, and individual adjustment. Gronlund (1969) gives specific examples of changing general instructional objectives into action verbs for writing corresponding affective objectives. Vargas (1972) states that in addition to teaching specific skills, we must strive to create positive attitudes. It is his belief that outlining specific behaviors that usually indicate positive attitudes is one way of measuring student attitudes, but only if students are under no pressure to produce the behaviors specified. According to Vargas, "Behavioral objectives for attitudes, in contrast to objectives for achievement, should not, therefore, be set as requirements for a course (p. 26)." Kibler et al., (1970) agrees with Vargas and suggests using questionnaires or interviews to determine what students might do under specified conditions.

Questioning the Validity of Performance Objectives

Even though there are many proponents of performance objectives, there are still those who question their value. Performance objectives are no panacea for all the ills of evaluation and it is important to look at all sides of the issue. Ebel (1973) challenges the entire process of directing instruction according to specified behavioral objectives. "Detailed specification of educational objectives is not essential to effective education", he has stated. Ebel called it "dangerously misleading to hold that educational objectives ought to be stated in behavioral terms." Part of the purpose of education, he said, "is to equip the individual to behave more effectively of his own volition in response to future needs and circumstances . . . We cannot teach the students how to behave in response to these needs and circumstances. We can only give him the general tools he will find useful in doing a particular job." "It is the cultivation of intellectual resources, not the cultivation of specific behavior patterns, that ought to be regarded as the essential purpose of education (p. 37)."

Georgia and Eldon Scriven (1973) hold similar beliefs as Ebel. According to them, behavioral objectives tend to concentrate on the end product, not the means of acquiring that end product. It is their contention that the "means" may be the most important aspect in learning certain behaviors. In addition, the Scrivens have noted that the Taxonomy of Educational Objectives, although an understandable and manageable categorization of man's behavior it has never been proven to be an accurate or complete categorization. It follows

then, that "Accepting this categorization as truth and basing all learning upon it in the form of behavioral objectives, is an act which can only be as accurate as is the accuracy of the categorization schema (p. 530)."

The Scrivens further believe that all learning does not result in an overt change of behavior. They question compensation for those learnings which cannot be communicated within the framework of behavioral objectives. The Scrivens, however, are not totally opposed to objectives. It is their belief that objectives should be used to organize learning tasks, where they lend themselves to this kind of organization. Time should be left however for flexibility: random learning, group process, discussion and inspiration. They also believe that the process used by the learner to reach the end objective may either change the end objective, or may be as important as reaching the objective. According to the Scrivens, not to recognize these possibilities . . . "relegates formal school learning to a series of leaps from end objective to end objective with, perhaps, little in between (p. 531)."

Vonk (1973) expresses some other concerns that should be noted. Vonk believes that measurable objectives in a classroom means teacher-made paper and pencil tests. Since the tests which are often fact-centered, should reflect the teaching, the teaching will soon become fact-centered, not insight-centered or attitude-centered or even student-centered. Vonk agrees with the Scrivens in fearing the "glorification of superficial and trivial fact at the expense of thoughtful subtlety. Moreover, some teachers will wind up teaching the test--especially if the test is used as a tool of

supervisory control (p. 544)." Vonk further concurs with the Scrivens and Ebel in the following paragraph.

> It is my belief that the behavioral objectives position is a mistake: that it furthers an empty-organism approach to boys and girls: that it engenders a screwed-down, authoritarian curriculum; that it will deteriorate into a teach-the-test, beat-the-test gamesmanship; then it can become a snoopervisory device for those who do not trust teachers; that it elbows subtle thinking and reflection of the path of learning to make way for fact and action; and that a teaching machine could do non-sense syllable education better and cheaper (p. 544).

The process of stating objectives in performance terms has its shortcomings, and certain criticisms are valid. In looking at objectives it is important to discern the legitimate contentions from the unwarranted excuses. Popham (1968) cites the following examples of dubious validity.

1. Trivial learner behaviors are the easiest to operationalize, hence the really important outcomes of education will be underemphasized.
   Rebuttal--instead of encouraging unimportant outcomes in education, the use of explicit instructional objectives makes it possible to identify and reject those objectives which are unimportant.

2. Prespecification of explicit goals prevents the teacher from taking advantage of instructional opportunities unexpectedly in the classroom.
   Rebuttal--when one specifies explicit ends for an instructional program there is no necessary implification that the means to achieve those ends are also specified. Unexpected instructional opportunities in the classroom should always be justified in terms of its contribution to the learner's attainment of worthwhile objectives.

3. Measurability implies behavior which can be objectively, mechanistically measured, hence there must be something dehumanizing about the approach.
   Rebuttal--A broadened conception of evaluation suggests that there are diverse and extremely sophisticated ways of securing qualitative as well as quantitative indices of learner performance.

4. That isn't really the way teaching is; teachers rarely specify their goals in terms of measurable behavior; so let's set realistic expectations of teachers.
   Rebuttal--There is a difference between identifying the status quo and applauding it. Instructors must begin to identify their instructional intentions in terms of measurable learner behaviors. The way teaching really is at the moment just isn't good enough.

5. In certain areas, e.g. fine arts and the humanities, it is more difficult to identify measurable pupil behavior.
   Rebuttal--Yes, it is more difficult, but those subject specialists should not be allowed to escape this responsibility. Criteria lurk whenever this teacher does make a judgment, and these criteria must be made explicit.

6. Measurability implies accountability; teachers might be judged on their ability to produce results in learners rather than on the many bases now used as indices of competence.
   Rebuttal--Teachers will no longer be judged on the idiosyncratic whim of visiting supervisors. Rather, he can amass evidence that, in terms of his pupils' actual attainments, he is able to teach efficiently. Even though this is a striking departure from the current state of affairs, and a departure that may be threatening to the less competent, the educator must promote this kind of accountability rather than the maze of folklore and mysticism which exists at the moment regarding teacher evaluation (p. 391-396).

Once we state objectives in performance terms we must examine student change rather than teacher performance. We must look beyond the implied abilities of students to their specific actions, beyond their unknown attitudes to their observed behaviors. Performance objectives must become a major portion of the instructional, as well as evaluation process.

There are a variety of opinions as to the extent and role, performance objectives should play in our modern educational systems. However, if performance objectives are to be used minimally or extensively, those involved in all phases of this endeavor must be well informed and trained in each aspect of development and implementation.

CHAPTER III

PROCEDURES UTILIZED IN THIS STUDY

Purpose and Nature of the Test

A review of literature revealed that there was no existing instrument or standardized test developed to ascertain whether or not teachers and teachers-in-training could write and identify performance objectives. The purpose of this study then was to: (1) develop an instrument designed to provide an estimate of one's ability to identify and write performance objectives; and (2) validate the instrument among four groups of teachers and teachers-in-training in the state of Michigan. As a result the researcher developed the Performance Objectives Test. The following sections of this chapter examine: the development of the test; scoring procedures; selection of the study population; description of the study population; and collection of data.

Development of the Test

A chart depicting the overall plan for development of the test is found in Figure 1. This chart includes the fundamental processes followed in developing the instrument. The test booklet was constructed as a product of the test plan, test items, item pool and the final test form. Accessory information was concurrently developed including the answer sheet and scoring procedure. In planning the Performance Objectives Test, the first task of the

researcher was to state the objectives of the test and the study. (1) The researcher will develop a written test designed to measure whether or not teachers and teachers-in-training can identify and write performance objectives. (2) The researcher will test this instrument for validity and reliability among four groups of teachers or teachers-in-training in the state of Michigan.

The content of the test was concerned with two specific areas: (a) identifying objectives; (b) writing objectives. Since a review of literature has shown that both identifying and writing objectives are crucial in effective management of learning, approximately half of the test items deal with identification and half with the elements and/or writing of objectives. Although many facets of identifying and writing objectives overlap one another, Figure 2 shows a breakdown of the test items. Questions 1-11, and 22-24 deal specifically with the identification of an objective. (Definitions of the terms identification, elements, and writing are clarified on page 5 and 7). Questions 13-21 relate to the elements of an objective, and questions 26-30 are concerned with the actual writing of an objective. Questions 15 and 17 encompass both the elements and the writing of an objective. Concurrently an answer sheet and test directions were developed. Copies of these are presented in the appendix.

In a symposium on "content validity", Ebel (1956) made the following point:

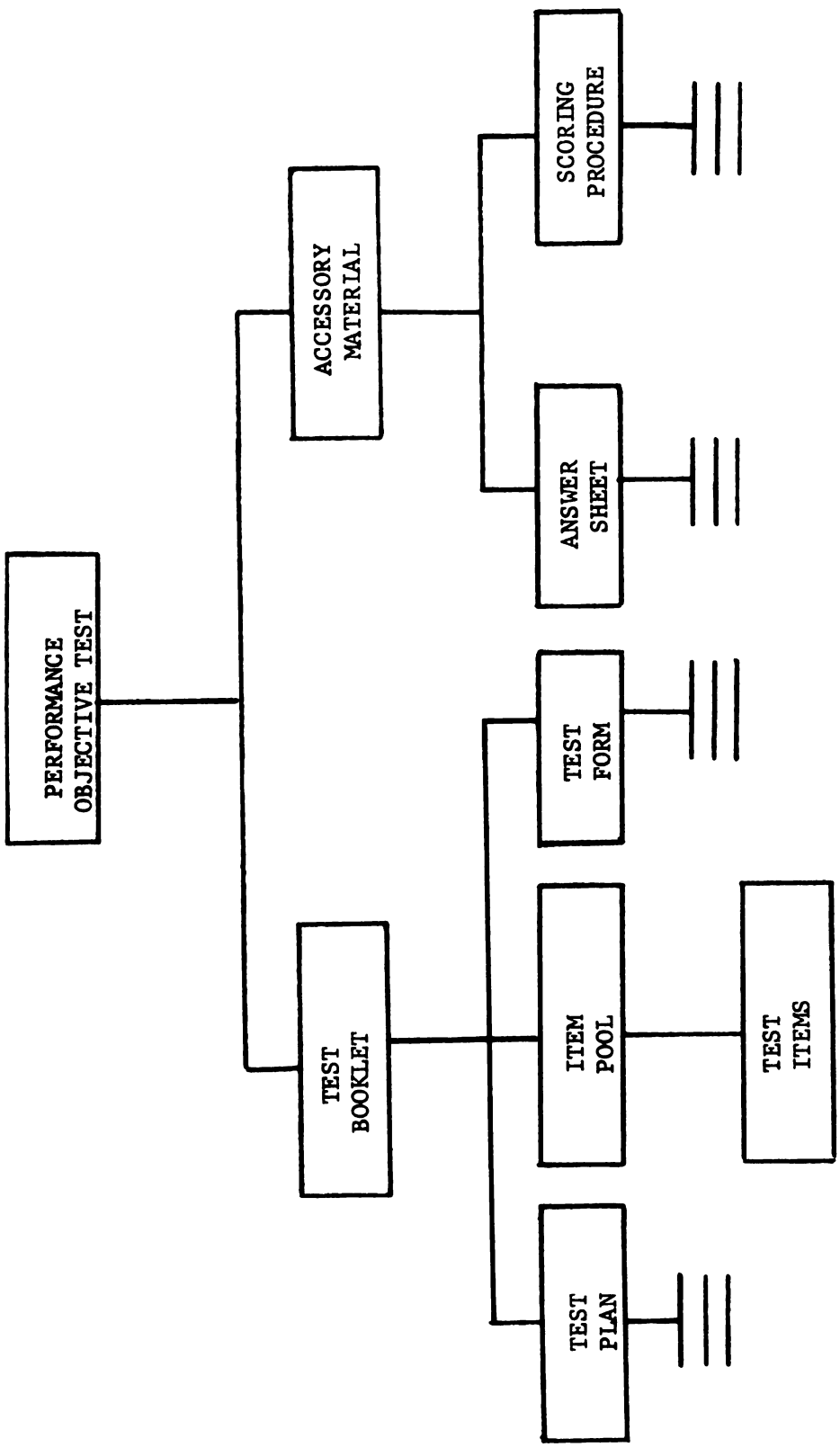

Figure 1

Test Structure

Question Number	Identification	Elements	Writing
1	X		
2	X		
3	X		
4	X		
5	X		
6	X		
7	X		
8	X		
9	X		
10	X		
11	X		
13		X	
14		X	
15		X	X
16		X	
17		X	X
18		X	
19		X	
20		X	
21		X	
22	X		
23	X		
24	X		
25			X
26			X
27			X
28			X
29			X
30			X

Figure 2

Test Items Breakdowns

> In passing judgment on the content validity of an educational achievement test one asks, 'To what extent does this test require demonstration by the student of the achievements which constitute the objectives of instruction in this area?' The more directly, completely, and reliably a test measures the attainment of these goals the greater is its content validity (p. 269).

With this in mind, the researcher sought to insure content validity by examining appropriate courses of study and textbooks as a basis for determining the skills, knowledges and understandings needed to identify and write performance objectives. When the test was developed it was reviewed by an authority* in the field of performance objectives, as evidenced by articles, lectures, films, etc. Suggestions offered consisted primarily of vocabulary changes. These suggestions were taken and revisions made where needed. Content was deemed to be appropriate.

The Performance Objective Test was pre-tested with a group of approximately thirty vocational instructors at a workshop on performance objectives in Pontiac, Michigan. Results of this test showed that although the test items were clearly understood, more time was needed to complete the test. Based on this information, the time allotment was changed from twenty-five minutes to forty minutes.

Scoring the Test

The Performance Objectives Test was scored on a weighted basis. Those questions dealing with identification received one

---

*Dr. Stephen Yelon, Assistant Director Learning Service, Michigan State University.

point each. No partial credit was given for identifying only part of the correct answer in the identification phase. The section of the test dealing with the composition of an objective and the actual writing of an objective varied in its credit, depending upon the complexity of the question. Partial credit was given for writing objectives.

The criteria used in grading the objectives included the following elements:

1. Student Oriented--A performance objective should be written in terms of student performance. Objectives which describe what the course, teacher, program or school will do are not appropriate for describing performance objectives.

2. Conditions--Relevant description of the physical setting and/or resources available to the learner as well as any social, psychological, or time considerations which may affect or limit performance.

3. Criteria or standards--Refers to a basis for evaluating the prescribed behavior. Actual measurement may include: (1) minimum number (e.g. must list 5 steps); (2) percent or proportion; (3) limitations of departure from fixed standard (e.g. must be correct to the nearest whole number); and (4) time constraints.

4. Performance--In a performance objective the verb, its modifiers, and its object should describe observable, measurable performance. This performance is assessed directly or through a product of the performance (e.g. Type a; Identify a; Caulk a.).

Selection of the Study Population

Both elementary and secondary teachers and teachers-in-training were selected as the population for this study. Several factors guided the selection of this population for the study:

1. Since all schools in Michigan would soon be utilizing performance objectives, both elementary and secondary teachers must be able to identify and write performance objectives.
2. The criteria for identifying and writing a performance objective is the same whether one is writing it for the primary or secondary level.
3. Teachers-in-training as well as teachers in the field must be able to identify and write performance objectives.

Description of the Study Population

The population was comprised of four groups of teachers or teachers-in-training in the state of Michigan.

Group I: Graduate students at Wayne State University - Detroit, Michigan (June, 1972). Sample size - twenty participants.

Group II: Conference participants at the Career Education Conference in Grand Rapids, Michigan (August, 1972). Sample size - fourteen participants.

Group III: Graduate and undergraduate students at Michigan State University - East Lansing, Michigan (October, 1972). Sample size - nineteen participants.

Group IV: Faculty members of the Capitol Area Career Center - Mason, Michigan (December, 1972). Sample size - thirty faculty participants.

The first page of the test requested background information in the following areas: occupation, whether or not previous instruction in performance objectives had been received, the nature of such instruction. All subjects utilized in the sample population were teachers or teachers-in-training. Figure 3 presents information regarding the percentage of teachers receiving previous instruction in performance objectives. The analysis of information submitted, is as follows: (1) Prior instruction received, Wayne State University 60 percent (12 participants); (2) Career Education Conference, 43 percent (6 participants); (3) Michigan State University, 55 percent (10 participants); (4) Capitol Area Career Center, 70 percent (21 participants). Figure 4 reports the type of previous instruction received. The groups investigated reported the following findings:

Wayne State University--Of those participants receiving prior instruction, the greatest number received it in a class (seven participants) or by reading (five participants). One participant received training in a seminar and no one reported training by means of programmed instruction or "other" means.

Career Education Conference--Three participants reported training in a class, two received training in a seminar. One participant each received training by means of reading or programmed instruction. No one reported training by "other" means.

Michigan State University--Five participants each reported training by means of class or programmed instruction. Two participants received training through reading and one participant received previous instruction through a seminar. Three participants reported

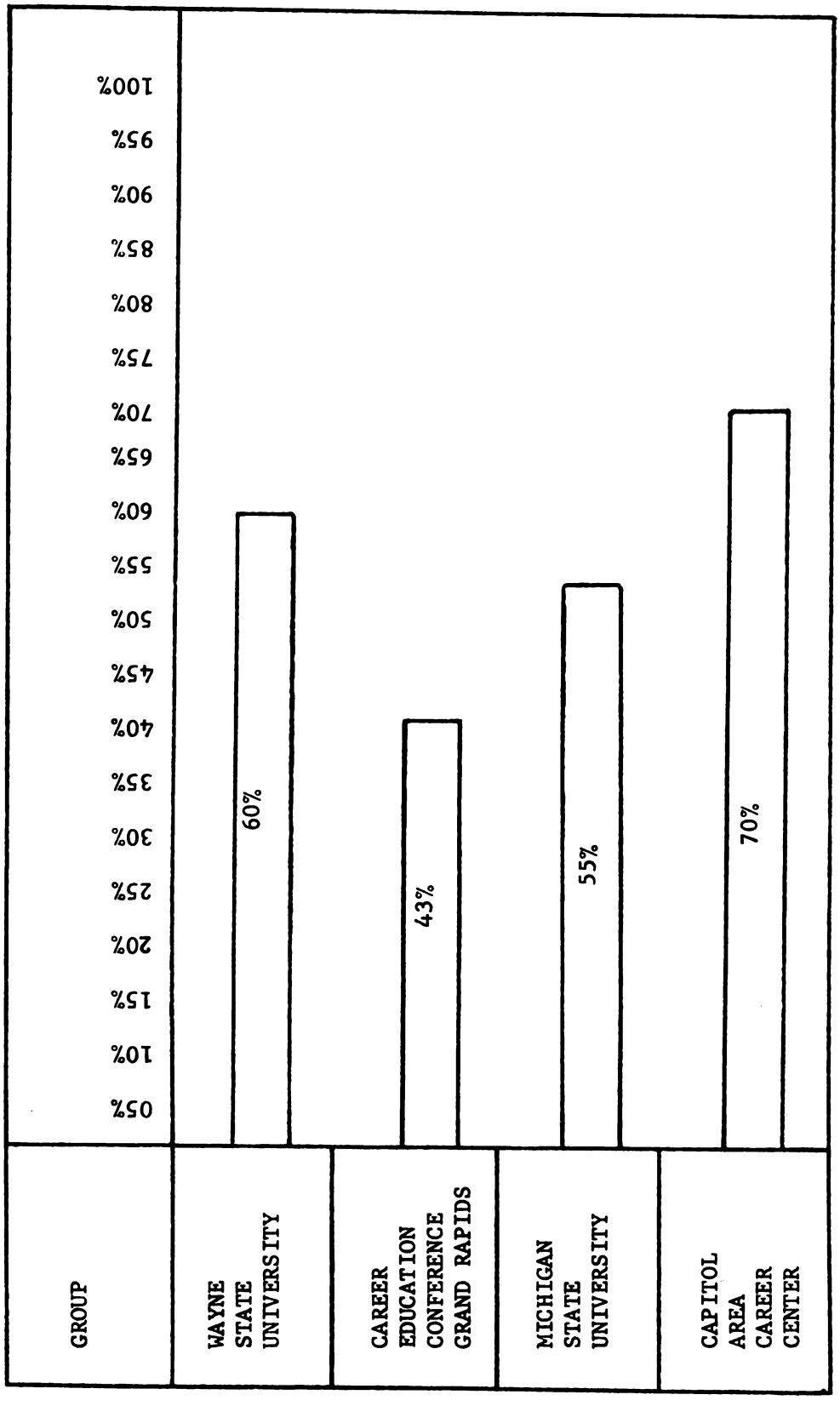

Figure 3

Percentage of Each Group Having Received Previous Instruction

Group		Book	Programmed Instruction	Class	Seminar	Other
WAYNE STATE UNIVERSITY	NUMBER OF PEOPLE CHECKING ITEMS	5	0	7	1	0
CAREER EDUCATION CONFERENCE GRAND RAPIDS		1	1	3	2	0
MICHIGAN STATE UNIVERSITY		2	5	5	1	3
CAPITOL AREA CAREER CENTER		10	4	14	9	2

*Participants may have checked more than one area of previous instruction.

Figure 4

Previous Instruction Breakdown

training by "other" means. "Other" was designated as workshop by two and unidentified by one participant.

Capitol Area Career Center--Fourteen faculty participants reported training by means of a class, and ten participants by means of reading. Nine participants received previous instruction by means of a seminar and four other members reported training by means of programmed instruction. Two participants received training by "other" means. Other was reported as inservice training by one and unidentified by the other member.

Collection of Data

The test was administered to the four groups of teachers or teachers-in-training as shown in Figure 5. The researcher had no control over whether or not instruction was given. With the exception of Group I, there was a six week time lapse in between administration of Test 1 and Test 2 and/or between Test 2 and Test 3. This six week time period was suggested by a testing authority* as enough time lapse for participants not to remember questions or answers. Answers to the test were not revealed to the participants until all tests had been completed. Due to the fact that Group I received instruction in between administration of Test 1 and Test 2, their results were not included in the test for reliability (Research Question 1).

---

*Dr. Maryellen McSweeney, Associate Professor Counseling and Personnel Services, Michigan State University.

Group	Instruction	1st Administration of Test	Instruction	2nd Administration of Test	Instruction	3rd Administration of Test
WAYNE STATE UNIVERSITY	No	X	Yes	X		
CAREER EDUCATION CONFERENCE GRAND RAPIDS	Yes	X	No	X		
MICHIGAN STATE UNIVERSITY	No	X	Yes	X	No	X
CAPITOL AREA CAREER CENTER	No	X	No	X		
		6 Weeks ←		→	6 Weeks ←	→

Figure 5

Test Administration Schedule

CHAPTER IV

ANALYSIS OF THE DATA

Five research questions were tested. In the following sections, the analysis for each is presented. As explained in Chapter III, the instrument developed was administered to the four sample groups at least twice. For purposes of including the group Michigan State University in the reliability test, the instrument was administered a third time. As stated in Chapter III, the instrument developed was answered on a voluntary basis, therefore, only the scores of those completing all administered tests were included in the analysis of data. A total of 83 teachers and teachers-in-training completed the series of tests.

Inasmuch as this research was a developmental study rather than experimental, the data collected does not represent a rigid statistical design. The sample groups were selected because of their interest in performance objectives. The results of the following tested research questions may prove helpful to others planning pre- and post-testing in the area of performance objectives.

The reliability of the instrument developed was investigated using the test-retest method. Pearson product moment correlations were computed for the two test administrations. Content validity was established through analysis of course content in the area of performance objectives and its application in the development of the

instrument. It was further established by having an authority* in the field, review the test items. A t-test for two independent samples was utilized in computing the analysis of variance for research questions III and IV. A t-test for two related samples was used to compute the gains score analysis of research question V.

In each of the following research questions, the specified group number refers to the following testing situations:

Group I - Wayne State University

Group II - Career Education Conference (Grand Rapids, Michigan)

Group III - Michigan State University

Group IV - Capitol Area Career Center

Research Question I

Is the test developed a reliable measure of whether or not teachers and teachers-in-training can identify and write performance objectives?

Test - retest scores from groups II, III, and IV were used to answer this question. Group I was excluded because instruction was received in-between the first and second administration of the test. Scores from the second and third administration were used for group III. The two administrations were given six weeks apart for each group. This time limit was established so the participants would not remember their previous answers, and yet not be so long that other events (self-instruction and additional learning) might occur, which would affect the scores on the retest. Due to the

---

*Dr. Stephen Yelon, Director Evaluation Services, Michigan State University.

vast differences in background and educational and professional experience, separate estimates of reliability were computed for each of the three groups.

Table 1

Correlation Between Test Scores on the First and Second Administration of the Performance Objectives Test

Group II	Mean	Test-Retest Reliability*
Administration I	51.1	r = .96
Administration II	52.2	

*Engelhart, M.D., Methods of education research, 1972, p. 222.

$$r = \frac{N\Sigma XY - \Sigma X \Sigma Y}{\sqrt{[N\Sigma X^2 - (\Sigma X)^2][N\Sigma Y^2 - (\Sigma Y)^2]}}$$

Table 2

Correlation Between Test Scores on the Second and Third Administration of the Performance Objectives Test

Group III	Mean	Test-retest Reliability*
Administration I	61.6	r = .92
Administration II	64.2	

Table 3

Correlation Between Test Scores on the Second and Third Administration of the Performance Objectives Test

Group IV	Mean	Test-Retest Reliability*
Administration I	46.7	r = .97
Administration II	50.4	

*Engelhart, M.D., Methods of educational research, 1972, p. 222.

$$r = \frac{N \Sigma XY - \Sigma X \Sigma Y}{\sqrt{[N \Sigma X^2 - (\Sigma X)^2][N \Sigma Y^2 - (\Sigma Y)^2]}}$$

In each of the groups tested there was a high correlation between the two scores, indicating that the test is measuring something rather reliably. At this point it is impossible to state that the test is a reliable instrument because content validity has not been tested as yet. Repeated testing of the instrument, however, does yield consistent results. The high correlations may be partially due to the small numbers within each individual group or the uniqueness of the groups. However, the data indicate that the answer to Research Question I is:

> Yes, the test is providing scores that appear to be quite stable over time.

Research Question II

> Is the test developed a valid measure of whether or not teachers and teachers-in-training can identify and write performance objectives?

As stated by Borg (1963, p. 81), "To establish the content validity of his test, the test producer usually describes in the

manual the techniques used to arrive at the test content". "Content validity is usually not expressed in numerical terms as are some other types." This researcher sought to insure content validity by examining appropriate courses of study and books in the area of performance objectives as a basis for determining the skills, knowledges, and understandings to be measured. The guidelines for the development of performance objectives established by the Michigan Department of Education were also consulted. Test items were based on the analysis of content, and came under three headings: identification, elements, and writing. When the test items were compiled and the first draft developed, it was submitted to an authority* in the field of performance objectives. The content was deemed appropriate and suggestions were offered in the area of vocabulary changes or suggested rewording. These changes were made where appropriate. Thus, it seems reasonable to conclude that:

> the test is a valid and reliable measure of whether or not teachers and teachers-in-training can identify and write performance objectives.

Research Question III

> Do teachers in the field score significantly higher at the .05 level of confidence on the first administrative of a test concerned with performance objectives than teachers-in-training?

Scores from group III (teachers-in-training) were compared with group I and group IV (teachers). The latter two groups were combined as both were teacher groups. Group II was excluded, because

---

*Dr. Stephen Yelon, Assistant Director Learning Services, Michigan State University.

they had received instruction before completing the first administration of the instrument. A t-test for two independent samples was utilized in computing the analysis of variance. The results of this test are as follows:

Table 4

Analysis of Variance Table on the First Administration Scores of Teachers and Teachers-In-Training

Group	N	Mean	$S_{M_1 - M2}$*	df	t*
III	19	44.7	5.4	67	.33
I & IV	50	46.52			

*Roscoe, John T., Fundamental research statistics (1969) pp. 166-67.

$$S_{M_1 - M_2} = \sqrt{\frac{SS_1 + SS_2}{n_1 + n_2 - 2}\left(\frac{1}{n_1} + \frac{1}{n_2}\right)} \qquad t = \frac{M_1 - M_2}{S_{M_1 - M_2}}$$

The research question asking whether teachers in the field score higher than teachers-in-training on the first administration of the test, was found to be not significant at the .05 level of confidence. The t value in the two-tailed test would have had to reach 2.0 to be considered significant. The mean score for teachers was higher, however, than the mean score for teachers-in-training. The lack of significance may be partially due to the small size of the samples. This research question would have to be answered in the following manner:

> No, teachers in the field do not score significantly higher on the first administration of a test concerned with performance objectives than teachers-in-training.

Research Question IV

Do teachers and teachers-in-training who state that they have received prior instruction in performance objectives score significantly higher at the .05 level of confidence on the first administration of the test than those who have received no instruction?

Groups I and IV representing teachers and Group III, representing teachers-in-training were used to answer this question. Group II was excluded because it had received formalized instruction before testing. A t-test for two independent samples was used in computing the analysis of variance. Even though no significant difference was found between teachers and teachers-in-training (question III), it was decided to keep the two groups separate in analyzing question IV and V. While this decision results in smaller groups, it did prevent obvious confounding that could occur if teachers and teachers-in-training were combined. The results for teachers-in-training and teachers are as follows:

Table 5

Analysis of Variance Table on the First Administration Scores of Those with Prior Instruction and Those with No Prior Instruction (Teachers-in-Training)

Group III	N	Mean	$S_{M_1 - M_2}$	df	t*
Prior Instruction	11	48.27	7.87	17	1.08
No Instruction	8	39.75			

*Roscoe, John T., Fundamental research statistics (1969), pp. 166-67.

$$S_{M_1 - M_2} = \sqrt{\frac{SS_1 + SS_2}{n_1 + n_2 - 2}\left(\frac{1}{n_1} + \frac{1}{n_2}\right)} \qquad t = \frac{M_1 - M_2}{S_{M_1 - M_2}}$$

The results of this t-test did not prove significant at the .05 level of confidence. The t value would have had to reach 1.7 to be considered significant. There was a sizeable difference however in mean scores. The lack of significance may have been due to the small sample size. This will need to be tested using larger and more adequate samples. The results for teachers are as follows:

Table 6

Analysis of Variance Table on the First Administration Scores of Those with Prior Instruction and Those with No Prior Instruction (Teachers)

Group I & IV	N	Mean	$S_{M_1 - M_2}$*	df	t*
Prior Instruction	33	50.39	6.2	49	1.84
No Instruction	17	39.00			

*Roscoe, John T., Fundamental research statistics (1969), pp. 166-67.

$$S_{M_1 - M_2} = \sqrt{\frac{SS_1 + SS_2}{n_1 + n_2 - 2}\left(\frac{1}{n_1} + \frac{1}{n_2}\right)} \qquad t = \frac{M_1 - M_2}{S_{M_1 - M_2}}$$

The results of the t-test indicate that teachers with prior instruction score higher at .05 level of confidence than teachers without prior instruction. As a result of these tests, the question must be answered in two different ways.

No, teachers-in-training who stated that they have received prior instruction in performance objectives do not score significantly higher at the .05 level of confidence on the first administration of the test than those who have received no instruction. Yes, teachers who stated that they have received prior instruction in performance objectives do score significantly higher at the .05 level of confidence on the first administration of the test than those who have received no instruction.

Possible reasons why this question was answered negatively for teachers-in-training and positively for teachers may be as follows:

1. The nature of prior instruction differed, e.g., more teachers checked prior classroom instruction than teachers-in-training.

2. Teachers and teachers-in-training may differ in educational background and professional experience. e.g., Teachers may attend more conferences or inservice training sessions related to performance objectives than teachers-in-training.

3. Teachers felt a more immediate need than teachers-in-training for learning how to identify and write performance objectives.

Research Question V

Do teachers and teachers-in-training after formalized instruction score significantly higher at the .05 level of confidence on the second administration of a test concerned with writing performance objectives?

Group III (teachers-in-training) and Group I (teachers) were used to answer this question. Groups II and IV were excluded, because they received no instruction between the first and second administration of the developed instrument. A t-test for two related samples was used to compute the gains score analysis of this research question. The results are as follows:

Table 7

Gains Score Analysis Table for Teachers-in-Training

Group III	N	Mean	$\bar{D}$	df	$S_{\bar{D}}$	t*
Pre-test	19	44.68	16.94	18	3.3	5.13
Post-test		61.63				

Table 8

Gains Score Analysis Table for Teachers

Group I	N	Mean	$\bar{D}$	df	$S_{\bar{D}}$	t*
Pre-test	20	46.3	17.15	19	2.3	7.46
Post-test		63.45				

*Roscoe, John T., Fundamental research statistics (1969), pp. 171-72.

$$t = \frac{\bar{D}}{S_{\bar{D}}}$$

$$\bar{D} = M_2 - M_1$$

$$S_{\bar{D}} = \sqrt{\frac{\Sigma d^2}{N \quad (N-1)}}$$

$$\Sigma d^2 = \Sigma (D - \bar{D})^2 = \Sigma D^2 - \frac{(\Sigma D)^2}{N}$$

$$D = X_2 - X_1$$

In each of the groups tested, there was a significant relationship between formalized instruction and a raise in scores on the second administration of the instrument developed. Both Group I and Group III showed an increase in scores that was significant considerably beyond the .05 level of significance. This research question was answered in a positive manner.

> Yes, teachers and teachers-in-training do score significantly higher at the .05 level of confidence on the second administration of a test after formalized instruction.

CHAPTER V

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

This final chapter includes the following topics: a summary of the investigation; conclusions; implications of the study; and recommendations for further research.

Summary

The purpose of this study was to: (1) develop an instrument designed to provide an estimate of one's ability to identify and write performance objectives; and (2) validate the instrument for reliability and content validity among four groups of teachers and teachers-in-training in the state of Michigan. As a result the researcher developed the Performance Objectives Test. In addition, the researcher sought to discover:

1. Whether teachers in the field would score significantly higher at the .05 level of confidence than teachers-in-training on the first administration of a test concerned with performance objectives;

2. Whether those teachers and teachers-in-training having received prior instruction would score significantly higher at the .05 level of confidence on the first administration of a test concerned with performance objectives than those receiving no prior instruction;

3. Whether teachers and teachers-in-training after formalized instruction score significantly higher at the .05 level of confidence

on the second administration of a test concerned with writing performance objectives.

The instrument developed was administered at least twice to four sample groups of teachers and teachers-in-training within the state of Michigan. For purposes of including group III (teachers-in-training from Michigan State University) in the reliability test, the instrument was administered a third time. With the exception of group I (Wayne State University), there was a six week time lapse in between administration of Test I and Test II and/or between Test II and Test III. This six week period was suggested by a testing expert* as enough time lapse for participants not to remember questions or answers, and yet not be so long that other events (self-instruction and additional learning) might occur that would affect the scores on the retest.

The test-retest method was used in investigating the reliability of the instrument developed. Pearson product moment correlations were computed for the two test administrations. For each of the groups tested, there was a high correlation between the two test scores ($r = .96$), ($r = .92$), ($r = .97$). This high correlation of scores indicates that the test is measuring the same thing reliably. Content validity was established through analysis of course content in the area of performance objectives. The results of this analysis were then applied to the development of test items.

---

*Dr. Maryellen McSweeney, Associate Professor Counseling Personnel Service, Michigan State University.

Content validity was further established by having an authority* in the field review the test items.

For Research Questions III and IV, a t-test for two independent samples was used to compute the analysis of variance. In Research Question III, teachers did not score significantly higher than teachers-in-training at the .05 level of confidence on the first administration of the test (t = .33). In Research Question IV, teachers receiving prior instruction did score significantly higher than those not receiving prior instruction at the .05 level of confidence (t = 1.84). However, teachers-in-training receiving prior instruction did not score significantly higher than those teachers-in-training not having received any prior instruction at the .05 level of confidence (t = 1.08). A t-test for two related samples was used to compute the gains score analysis of Research Question V. As a result of the tests, it was discovered that teachers-in-training and teachers do score significantly higher at the .05 level of confidence on the second administration of the test when they have received formalized instruction in between completing the two tests (teachers-in-training, t = 5.13), (teachers, t = 7.46).

Conclusions

Within the limitations of the study, the following conclusions seem reasonable based on the findings:

---

*Dr. Stephen Yelon, Assistant Director Learning Service, Michigan State University.

1. The instrument developed to measure whether teachers and teachers-in-training can write performance objectives indicates a positive attitude toward reliability. Based upon data collected, the instrument provides scores that appear to be stable over time.

2. Based upon a thorough analysis of course content related to performance objectives and reviewed by an authority* in the field, the instrument developed appears to be both reliable and valid in terms of content validity. The instrument does reliably measure whether or not teachers and teachers-in-training can identify and write performance objectives.

3. Teachers in the field do not score significantly higher than teachers-in-training on the first administration of a test concerned with performance objectives at the .05 level of confidence. The mean score for teachers was 46.5 and the mean score for teachers-in-training was 44.7. Although the t-test did not prove significant, the mean score for teachers was higher than for teachers-in-training. The lack of significance may have been partially due to the small sample size.

4. Teachers who have received prior instruction in performance objectives do score significantly higher at the .05 level of confidence on the first administration of the test, than do those teachers who have received no prior instruction. There is no significant difference at the .05 level of confidence, however, for teachers-in-training who

---

*Dr. Stephen Yelon, Assistant Director Learning Service, Michigan State University.

have received prior instruction and teachers-in-training who have received no prior instruction. Mean scores do, however, vary considerably on the first administration of the test: Teachers-in-training (prior instruction 48.27), Teachers-in-training (no prior instruction 39.75). The lack of significance may be attributed to the small sample size. This should be retested using larger and more randomized samples.

5. There was a significant relationship between formalized instruction and a raise in scores on the second administration of the test. Both teachers and teachers-in-training showed an increase in scores that was significant considerably beyond the .05 level of significance. Mean scores of both groups also rose significantly. Teachers (pre-test 46.3, post-test 63.5); Teachers-in-training (pre-test 44.7, post-test 61.6).

Based upon the data collected from numbers four and five, it can be concluded that formalized instruction does affect the increase in scores on a post-test. It appears that unstructured instruction has less of an effect upon the learning that takes place.

Implications

The development of this instrument and the results of the initial testing suggest ways of instituting the performance objectives thrust in our educational systems today. Literature in the area of performance objectives has shown us that teachers need specialized training in identifying, developing and implementing performance objectives. The results of the four groups tested verify this need for specialized training.

Teachers who had received prior instruction in performance objectives scored significantly higher on the first administration of the test, than teachers who had received no prior instruction. Teachers-in-training who had received prior instruction in performance objectives did not score significantly higher than teachers-in-training who had no instruction. One possible reason for the lack of significant differences in scores between the two groups of teachers-in-training may have been the small sample size. If one looks beyond the sample size, however, and refers to the type of prior instruction received, (Chapter 3, Figure 4), only 38 percent of the teachers-in-training who received prior instruction, received it in a formalized setting (classroom or seminar). On the other hand, of those teachers who stated they had received prior instruction in writing performance objectives, 60 percent received it in classroom or seminar training. The data indicate that:

1. Instruction in identifying and writing performance objectives is needed to recognize, write and utilize performance objectives in an adequate manner.
2. More effective instruction takes place in a formalized setting (classroom or seminar situation), rather than through self-learning (reading and programmed instruction booklets) alone.

The above inferences can also be reinforced by looking at the scores of teachers and teachers-in-training after formalized instruction (Chapter IV, Tables 7 and 8). Both groups showed an increase in scores that was significant considerably beyond the .05 level of confidence.

It is also significant to note that the type of instruction received was of a formalized nature rather than only self-learning.

When teachers' scores were compared to scores of teachers-in-training, there was no significant difference at the .05 level of confidence. Mean scores did seem to vary however for the two groups. In each test made, the mean score for teachers was higher than for teachers-in-training. Possible reasons for this variation are:

1. The nature of prior instruction differed (e.g. more teachers checked prior classroom instruction than teachers-in-training).
2. Teachers and teachers-in-training may differ in educational background and professional experience (e.g. teachers may attend more conferences or in-service training sessions related to performance objectives, than teachers-in-training).
3. Teachers may feel a more immediate need than teachers-in-training for learning how to identify and write performance objectives.

The data indicate that when pre-service or in-service training is being planned, it should be designed to meet the needs of the particular group being serviced. Training in performance objectives should be made as relevant as possible, with practical applications given where possible. The instrument developed could be used as a diagnostic tool in planning the depth and nature of training needed in performance objectives. It also could be utilized as an evaluation tool in

determining the extent of learning that has taken place at an in-service or pre-service training session.

Recommendations for Further Research

This research was designed as a developmental study, for the purpose of creating an instrument which would measure whether or not one could identify and write performance objectives. Replicative research that may support the research questions asked and/or extend the findings of this study could afford useful information for other interested in providing training in the area of performance objectives. The following recommendations are made on this basis:

1. Reliability and validity data are crucial to the significance of any instrument. The tests made to check for reliability and validity could be replicated with a larger and more random sample.

Validity tests could be extended into the area of predictive validity. An investigation of this nature would enable one to know whether those taking the test could write acceptable objectives in the field as well as on the test. Reliability could be further investigated by developing another similar form of the instrument, and by administering the two parallel forms of the test to the same group of individuals and correlating the scores.

2. If the future professional success of teachers-in-training is dependent upon the training they receive from teacher-educators, perhaps teacher-educators should be given the test to determine if they can identify and write performance objectives. The implications of this study could possibly not only affect the curriculum for teachers-in-training, but also the in-service needs of teacher-educators.

Since identifying and writing performance objectives, is only one facet in the successful utilization of objectives in curriculum planning and evaluation, future studies could investigate:

3. Teacher attitude. The attitude teachers have toward performance objectives could affect whether or not they use objectives, to what extent, and even how their students feel about performance objectives. It is therefore important to assess what this attitude is, and take steps to modify it, if needed. Discerning what the teacher attitude is toward objectives, may well be the first step in planning pre-service and in-service needs.

4. Ability of teachers to evaluate objectives previously written. Teachers must also be able to evaluate the worth (in terms of content, construction, and relevancy) of objectives previously developed.

5. In-service training needs. Performance objectives, in and of themselves, are no panacea. Various methods must be investigated and developed for in-servicing teachers in ways to utilize objectives in curriculum planning and evaluation.

6. Articulation. In the area of vocational education, there is an intense need for articulation in developing objectives for similar vocational programs at the secondary and post-secondary levels. Successful means to accomplish this articulation are needed at both educational levels.

7. Revision and updating methods. Once performance objectives are written and instituted into the classroom situation, teachers cannot rest on their laurels. Means of keeping the objectives current must be investigated.

LIST OF REFERENCES

LIST OF REFERENCES

Ammons, M. The definition, function, and use of educational objectives. The Elementary School Journal, May, 1962, 62, 432-36.

Bailey, P. T., Bland, D. H. & Brown, D. Guidelines for the performance objectives development project prepared by Michigan Department of Education, Vocational Education and Career Development Service, September, 1972, 1-49.

Baker, E. L. The differential effect of behavioral and non-behavioral objectives given to teachers on the achievement of their students. Unpublished doctoral dissertation, University of California 1967.

Bernabei, R. & Leles, S. Behavioral objectives in curriculum and evaluation. Dubuque, Iowa: Kendall/Hunt Publishing Company, 1970.

Billings, N. A. A determination of generalizations basic to the social studies curriculum. Baltimore: Warwick and York, 1921.

Bloom, B. S., (Ed.) Taxonomy of educational objectives. New York: David McKay, Inc. 1956, 1-9.

Bobbitt, F. The curriculum. Boston: Houghton Mifflin Co., 1918.

Bobbitt, F. How to make a curriculum. Boston: Houghton Mifflin Co., 1924.

Borg, W. R. Educational research. New York: David McKay Company, Inc., 1963.

Bryant, N. Jr. The effect of performance objectives on the achievement level of selected eighth-grade science pupils in four predominantly Black inner city schools. Unpublished doctoral dissertation, Indiana University, 1970.

Byers, E. E. (project director) Writing performance goals: Strategy and prototypes -- A manual for vocational and technical educators. New York: Gregg/McGraw Hill and The Center for Vocational and Technical Education at the Ohio State University.

Cohen, A. M. Objectives for college courses. Beverly Hills, California: Glencoe Press, 1970.

Consalvo, R. W. Evaluation and behavioral objectives. The American Biology Teachers, 1969, 31, 230-32.

Doty, C. R. The effect of practice and prior knowledge of educational objectives on performance. Unpublished doctoral dissertation, Ohio State University, 1968.

Ebel, R. L. Obtaining and reporting evidence on content validity. Educational and Psychological Measurement, 1956, 16, 269.

Ebel, R. L. Travel on your tiptoes, four testing experts warn. Nations Schools, February, 1973, 91 (2), 37.

Engelhart, M. D. Methods of educational research. Chicago: Rand, McNally & Company, 1972.

Engman, B. D. Behavioral objectives: Key to planning. The Science Teacher, 1968, 35, (7), 86-87.

Farr, R. The evaluation of reading behavior. In J. D. Walden (Ed.), Bulletin of the School of Education. Indiana University, November, 1969 45 (6), 101-111.

French, W. et al., Behavioral goals of general education in high school. New York: Russell Sage Foundation, 1957.

Gagnė, R. M. The analysis of instructional objectives. Paper prepared for the National Symposium of Research in Programmed Instruction. Washington, D. C.: National Education Association, 1963.

Gilpin, J. B. (Forward) in R. F. Mager, Preparing instructional objectives. Palo Alto, California: Fearon Publishers, 1962.

Glaser, R. Objectives and evaluation: An individualized system. Science Education News, June, 1967, 1-3.

Guiler, W. S. Objectives and activities in arithmetic. Chicago: Rand, McNally and Co., 1926.

Gronlund, N. E. Stating behavioral objectives for classroom instruction. New York: The Macmillan Company, 1969.

Huffman, H. A model for generating performance goals. American Vocational Journal, April, 1973, 48, (4) 26-30.

Kearney, N. C. Elementary school objectives. New York: Russell Sage Foundation, 1953.

Kibler, R. J., Barker, L. L., & Miles, D. T. Behavioral objectives and instruction. Boston: Allyn and Bacon, Inc, 1970.

Lapp, K. D. A developmental study of elementary teachers' ability to write behavioral objectives. Unpublished doctoral dissertation, Indiana University, 1970.

Mager, R. F. Preparing objectives for programmed instruction. San Francisco: Fearon Publisher, 1961.

Mager, R. F. Preparing instruction objectives. Belmont, California: Fearon Publishers, 1963.

Mazur, J. L. Educational objectives an integral part of evaluation. Educational evaluation. Official proceedings of a conference sponsered by the Ohio State Department of Education, July 27-30, 1969.

McAshan, H. H. Writing behavioral objectives -- A new approach. New York: Harper & Row, 1970.

Michigan Department of Education, Developing performance objectives, undated, 1-17.

Miles, D. T., Kibler, R. J. & Pettigrew, L. E. The effects of study questions on college students' test performance. Psychology in the Schools, 4, 25-26.

Miller, R. B. A method for man-machine task analysis. Technical report 53-137, Wright Air Development Center. Ohio: Wright-Patterson AFB, June, 1953.

Miller, R. B. Task description and analysis. (ed.) R. M. Gagne, Psychological principles in system development. New York: Holt, Rinehart and Winston, 1962.

Moffett, G. M. Use of instructional objectives in the supervision of student teachers. Unpublished doctoral dissertation, University of California - Los Angeles, 1966.

Nerbovig, M. H. Teachers' perceptions of the functions of objectives. Unpublished doctoral dissertation, University of Wisconsin, 1956.

Ojemann, R. H. Should educational objectives be stated in behavioral terms, Part II. The Elementary School Journal, 1969, 69, 229-35.

Pendelton, C. S. The social objectives of school english. Tennessee: Author, 1924.

Popham, W. J. & Baker, E. L. Systematic instruction. Englewood Cliffs, New Jersey: Prentice-Hall, Inc., 1970.

Popham, W. J. Probing the validity of arguments against behavioral goals. (ed.) M. B. Kapfer, Behavioral objectives in curriculum development. Englewood Cliffs, New Jersey: Educational Technology Publications, 1971, 390-98.

Ridenour, H. E. Cultivating the affective domain. American Vocational Journal, April, 1973, 48, (4), 44-5, 82.

Roscoe, J. T. Fundamental research statistics. New York: Holt, Rinehart and Winston, Inc., 1969.

Scriven, C. H. & Scriven, E. G. Behavioral objectives and the learning psyche. The Clearing House, 1973, 47 (9), 529-31.

Sciara, F. J. and Jantz, R. K. Accountability in american education. Boston: Allyn and Bacon, Inc., 1972.

Southern Association of Colleges and Schools. Project for the development of a multi-state consortium for the production of performance objectives and criterion measures in occupational education, Florida Department of Education, Grant # S.D.E., 730-073, 1973.

Sullivan, H. J. Developing effective objectives-based instruction. Educational Technology, July, 1971, 53-56.

Tyler, R. W. Constructing achievement tests. Columbus, Ohio: Ohio State University, 1938.

Tyler, R. W. & Herrick, W. E. (Eds.) Toward improved curriculum theory. (Supplementary Educational Monographs). Chicago: University of Chicago Press, 1950, (71), 37-50.

Tyler, R. W. Basic principles of curriculum and instruction. Chicago: University of Chicago Press, 1951.

Vargas, J. S. Writing worthwhile behavioral objectives. New York: Harper & Row, Publishers, 1972.

Vogler, D. E. Let's get on with the performance. American Vocational Journal, April, 1973, 48, (4), 86, 99.

Vonk, H. G. Behavioral objectives let the buyer beware. The Clearing House, 1973, 47 (9), 543-44.

Wickline, L. L. Educational accountability. Educational accountability through evaluation. (ed) E. Wayne Robertson, Englewood Cliffs, New Jersey: Educational Technology Publications, Inc., 1971, 7-18.

Williams, H. H. The buck stops here. American Vocational Journal, April, 1973, 48, (4), 73-76.

APPENDICES

APPENDIX A

Teacher Background Information Form

Name: _____

Address: _____

Telephone No.: _____

OCCUPATION: CHECK ONE

1. Teacher: _____

2. Teacher-in-training: _____

3. Administrator: _____

4. Michigan Department of Education: _____

5. Other: _____

Have you ever had any instruction in writing performance objectives?

Yes _____ No _____

* If yes, answer the next question

What type of previous instruction in performance objective writing have you incurred?

Book: _____

Programmed Instruction: _____

Class: _____

Seminar: _____

Other: _____

(Please explain)

APPENDIX B

Performance Objectives Test

PERFORMANCE OBJECTIVES TEST DIRECTIONS

1. Read directions carefully for each section of the test.

2. You will have forty minutes to complete the test.

3. Answer each question to the best of your ability.

4. Answer each question as quickly as possible. If you do not know the answer to a question, go on to answer the next question.

Following are statements concerning student performance. If they are stated in performance terms, write YES, if not, write NO.

1. The student will know how to use display materials. _____

2. The student will have a better understanding of how the study of home management can help improve home environments and the quality of family life. _____

3. The student will be able to construct, maintain and repair radios and television sets. _____

4. The student will know how to thread a Singer Sewing Machine, Model 170. _____

5. The student is able to fully appreciate the importance of being on time for work every day. _____

6. The student will be able to tune a Volkswagon engine within the time limit and according to the specifications established by the instructor. _____

7. The student understands the importance of the Dictionary of Occupational Titles. _____

8. Given an automobile, the student will be able to static balance all four wheels within one inch ounce of balance within forty-five minutes according to ASME Standards. _____

Which of the following Objectives is less ambigious? (Circle the correct letter (a or b))

9. a. The student will gain an appreciation of the importance of being properly dressed for work.

   b. The student will inventory his clothing suitable for work and discuss the various possibilities with fellow classmates.

10. a. Given a furniture catalog, the student will select the appropriate furniture (in terms of quantity, quality and style) to place in a store. The student will have two weeks to complete the assignment and it will be graded according to the merchandising principles discussed in class.

    b. The student will develop good taste in selecting colors, fabrics, and furniture for industrial and home interior decoration.

11. a. Given a letter typed on an IBM selectric typewriter, Model 820, the student will know how to correct typing errors.

b. Given a selectric typewriter, Model 820, the student will be able to correct one typing error, with 100% accuracy, using liquid paper. The correction will be made with enough accuracy that the error will not appear when the finished product is duplicated.

13. Select the following phrases which describe observable behavior on the part of the student. Circle the letters.

    a. to write
    b. to enjoy
    c. to understand
    d. to comprehend
    e. to construct
    f. to appreciate

14. Performance objectives are always written in behavioral terms; that is, they must contain an action verb. Which of the following verbs would be most suitable for incorporating in an objective: Circle the letters.

    a. to <u>really</u> understand
    b. to have a knowledge of
    c. to list
    d. to believe
    e. to solve
    f. to contrast
    g. to compare
    h. to recite
    i. to identify
    j. to differentiate

Read the following three objectives and determine whether or not they contain action verbs. If the objective contains an action verb, put a check mark at the end of the sentence. If the objective does not contain an action verb, rewrite it in behavioral terms.

15. The student will grasp the significance of keeping all stock in order.

16. The student will list the primary and secondary colors on the color wheel.

17. The student will understand the use of the micrometer.

18. Name and define the three basic parts of a behavioral objective.

    a.

    b.

    c.

Read each of the following objectives and circle the behavioral term(s); e.g., Given the necessary ingredients, the student will mix and knead the dough.

19. a. At the completion of the classroom and shop experiences, the student will be able to prepare, develop and interpret blueprints.

    b. The student will be able to verify accuracy of data punched on tabulating cards using a keyboard type of machine that rejects incorrectly punched cards.

Read each of the following objectives and underline the standards. If the standards are not given, put a check mark at the end of the objective.

Examples:

The student will baste a hem one inch deep on an A-line skirt, according to the instructions given in class.

The student will be able to file an incoming correspondence. ✓

20. a. The student will be able to read a thermometer.

    b. Given a single lens reflex camera, and high speed ektrachrome film, the student will load the camera within two minutes with 100% accuracy.

Read each of the following objectives and bracket the conditions. If the conditions are not given, put a check mark at the end of the objective.

Example:

[Given a pants pattern that is too large,] the student will be able to make the necessary alterations in the pattern.

21. a. Using egg whites, sugar, and vanilla flavoring, the student will make a meringue topping for a pie.

    b. On an IBM executive model typewriter, the student will type a letter with 100% accuracy in three minutes.

Label the following objectives as (C) Cognitive [mental activity] (A) Affective [attitudinal] (P) Psychomotor [physical skill]

22. The student will demonstrate his understanding of responsible work habits by reporting to work as scheduled each day.

23. The student will be able to cut, clip, and fix position concrete blocks, brick, and glass blocks using bonding materials and hand tools.

24. The student will be able to determine the turnover rate for an item or a group of items.

Complete the following objectives, so that they are stated in performance terms.

25. Given a typewriter . . .

26. The student demonstrated his enjoyment of art by . . .

27. Given an Algebraic equation . . .

Write a performance objective for each of the following situations. You may write on the back of this sheet.

28. a. Gary always appears for work with hair that his employer feels is too long and clothes that are inappropriate.

    b. Jane says she understands how a typewriter works, but whenever a minor problem arises, she doesn't know the name of the malfunctioning part.

For questions 29 and 30, write your answers on the back of the page.

29. Write two Educational Goals which you feel would apply to your curriculum area.

30. Change the two goals to performance objectives in each of the following domains.

    a. cognitive (mental activity)
    b. affective (attitudinal)
    c. psychomotor (physical skill)

APPENDIX C

Scoring Procedure for Performance Objectives Test

SCORING PROCEDURE

QUESTION NUMBER	POINTS
1.	1
2.	1
3.	1
4.	1
5.	1
6.	1
7.	1
8.	1
9.	1
10.	1
11.	1
13.	1
14.	1
15.	0 or 2 points (no partial credit)
16.	1
17.	0 or 2 points (no partial credit)
18.	0, 2, 4 or 6 points (partial credit)
19. a + b	0 or 1 point (both must be correct)
20. a + b	0 or 1 point (both must be correct)
21. a + b	0 or 1 point (both must be correct)
22.	1
23.	1
24.	1
25.	0, 1, 2, or 3 points (partial credit)

QUESTION NUMBER	POINTS
26.	0, 1, 2, or 3 points (partial credit)
27.	0, 1, 2, or 3 points (partial credit)
28. a.	0, 2.5, 5, 7.5, or 10 points (partial credit)
b.	0, 2.5, 5, 7.5, or 10 points (partial credit)
29. a.	5 (no partial credit)
b.	5 (no partial credit)
30. a.	0, 1.25, 2.5, 3.75, or 5 points (partial credit)
b.	0, 1.25, 2.5, 3.75, or 5 points (partial credit)
c.	0, 1.25, 2.5, 3.75, or 5 points (partial credit)
a.	0, 1.25, 2.5, 3.75, or 5 points (partial credit)
b.	0, 1.25, 2.5, 3.75, or 5 points (partial credit)
c.	0, 1.25, 2.5, 3.75, or 5 points (partial credit)
	(MAXIMUM 30 POINTS)

MAXIMUM SCORE FOR PERFORMANCE OBJECTIVES TEST: 99 POINTS

APPENDIX D

Answer Sheet for Performance Objectives Test

ANSWER SHEET

1. No
2. No
3. Yes
4. No
5. No
6. Yes
7. No
8. Yes
9. B
10. A
11. B
13. A, E
14. C, E, F, G, H, I, J
15. No action verb - student must supply verb
16. ✓
17. No action verb - student must supply verb
18. a) conditions
    b) action verb
    c) standards or criteria
19. a) prepare, develop and interpret
    b) verify
20. a) ✓
    b) within two minutes with 100% accuracy
21. a) Using egg whites, sugar and vanilla flavoring
    b) On an IBM executive model typewriter
22. A
23. P
24. C

25. Must have conditions, action verb, and standards or criteria.

26. Must have conditions, action verb, and standards or criteria.

27. Must have conditions, action verb, and standards or criteria.

28. a) The performance objective must include: performer (student), givens or conditions, action verb, standards or criteria.

    b) The performance objective must include: performer (student), givens or conditions, action verb, standards or criteria.

29. Each goal must contain the following criteria: 1) student oriented 2) usuable verb 3) product vs. process.

30. Each performance objective must contain the following: performer or student, givens or conditions, action verb, standards or criteria.

Criteria for Goal Statements

1. Student oriented.	Goal statements should be written in terms of student goals. A goal statement should describe a skill, understanding, or attitude which is to be developed as an output of the learning experience being described.
2. Usable verb.	Goal statements should contain verbs which describe or suggest observable, measurable student performance.
3. Product vs. Process.	Each goal statement should describe a characteristic (or several characteristics) of the learner upon completing the task. Such a statement is significantly different than a statement which describes a process through which the student will go in order to achieve a desired educational outcome.

Criteria for Performance Objectives

1. Student oriented.	A performance objective should be written in terms of student performance. Objectives which describe what the course, teacher, program or school will do are not appropriate for describing performance objectives.
2. Conditions.	Relevant description of the physical setting and/or resources available to the learner as well as any social, psychological, or time considerations which may affect or limit performance.
3. Criteria or Standards.	Refers to a basis for evaluating the prescribed behavior. Actual measurement may include: 1. Minimum number (must list 5 steps) 2. Percent or proportion 3. Limitations of Departure from fixed standard (must be correct to the nearest whole number) 4. Time constraints
4. Performance.	In a performance objective the verb, its modifiers, and its object should describe observable, measurable performance. This performance is assessed directly or through a product of the performance. (e.g., Type a; Identify a; Caulk a.)