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EARL WAYNE ROBERSON

1967
THE PREPARATION OF AN INSTRUMENT FOR THE ANALYSIS OF TEACHER CLASSROOM BEHAVIOR

by

Earl Wayne Roberson

A Dissertation Submitted to the Faculty of the
COLLEGE OF EDUCATION
In Partial Fulfillment of the Requirements For the Degree of
DOCTOR OF EDUCATION
In the Graduate College
THE UNIVERSITY OF ARIZONA

1967
I hereby recommend that this dissertation prepared under my direction by Earl Wayne Roberson entitled THE PREPARATION OF AN INSTRUMENT FOR THE ANALYSIS OF TEACHER CLASSROOM BEHAVIOR be accepted as fulfilling the dissertation requirement of the degree of DOCTOR OF EDUCATION.

Dissertation Director: William D. Barnes  Date: 5/12/67

After inspection of the dissertation, the following members of the Final Examination Committee concur in its approval and recommend its acceptance:

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*This approval and acceptance is contingent on the candidate's adequate performance and defense of this dissertation at the final oral examination. The inclusion of this sheet bound into the library copy of the dissertation is evidence of satisfactory performance at the final examination.
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SIGNED: Earl Wayne Roberson
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ABSTRACT

This study originated from the needs of a Tucson Public Schools teacher in-service project. The study focused on teacher self-appraisal utilizing some observational technique for studying the teaching act as documented on video recordings. A survey of the observation systems seemed to indicate the need for some new system of simultaneously coding video recordings of teacher verbal and non-verbal classroom behavior. This study was then initiated to accomplish the following tasks: (1) to survey existing observation systems for the analysis of teacher classroom behavior, (2) to select the most nearly adequate instrument to modify and use in the coding of video-taped recordings of teacher classroom behavior, to use pre-recorded video-tapes in checking the applicability of the modified instrument, (3) to further modify and adapt the instrument as needed, and (4) to conduct a pilot study to establish the adequacy and reliability of the instrument.

From the following survey of existing instruments, Galloway's system for coding teacher non-verbal classroom behavior was selected to be modified. The modifications included: (1) the addition of categories to include verbal expressions, (2) the inclusion of the objectives dimension and methods dimension of teacher behavior, and (3) the
adaptation of the classification system to IBM cards for efficient analysis of the recorded teacher behaviors.

The task of developing and modifying an instrument for the coding of teacher verbal and non-verbal classroom behaviors was organized into three phases. Phase I was directed to the task of surveying the existing instruments and selecting the most adequate for local needs. Phase II included the organizing and synthesizing categories of behavior which the instrument would include. Phase III involved a pilot study in which video recordings of teaching were secured. These were then utilized in testing the new instrument by conducting a pilot study involving six graduate students from the University of Arizona. Instrument modifications and observation procedures were made on the basis of this pilot study.

The completed instrument contained three dimensions of teacher classroom behavior: (1) the objective dimension of behavior included the cognitive and affective categories from Bloom's taxonomies of educational objectives, (2) the methods dimension of behavior contained the open and closed methods of teaching in the classroom according to James MacDonald's concept of gamesmanship in the classroom, and (3) the expressions dimension included locally developed verbal categories as well as Galloway's non-verbal categories of teacher expressions.
The pilot study results revealed that the objectives and methods category agreements ranged from .89 to 1.00. The categories of teacher verbal and non-verbal expressions yielded the lowest coder agreements, ranging from .78 to 1.00. Approximately 85% of the teacher expressions in both categories were classified as routine.

Conclusions of the investigation were that: (1) instruments for the simultaneous coding of teacher verbal and non-verbal classroom behavior were not readily available, (2) teacher classroom behavior can be described in terms of the dimensions of teacher objectives, methods and expressions, and (3) all three dimensions lend themselves to further experimentation, modification, and development.
CHAPTER I

INTRODUCTION

One of the most active lines of research in education at the moment centers on describing the teaching process within the context of the classroom. It is only during the last decade that a concerted study of teacher classroom behavior using systematic observation procedures has been undertaken.

Barr, Withall, Mitzel and Medley, and Hughes are some of the pioneers in the field of instrument development for the systematic observation of teaching.


4Marie Hughes et al., Development of the Means for the Assessment of the Quality of Teaching in Elementary Schools, Cooperative Research Project No. 353 (Salt Lake City: University of Utah Press, 1959).
behavior; others are Smith, Ryans, and Flanders. Since their efforts, a host of additional researchers have joined the task. Most notable among the newcomers are: Bellack, Taba, Perkins, Amidon and Hunter, and MacDonald.

Observational systems developed thus far can be divided roughly into three categories: (1) those dealing with classroom interaction, where most of the studies can

---


be traced to the work of Withall,\textsuperscript{13} (2) those dealing with attempts to measure classroom behavior per se, to describe quantitatively what goes on in the classroom; this type of observation system centers around the work of Mitzel and Medley,\textsuperscript{14} and (3) those dealing with the cognitive aspects of the teaching process which was initiated by Smith and Meux.\textsuperscript{15} There is some degree of overlap among the instruments developed within these three categories.

The above mentioned instruments vary in breath of coverage, sources of data, units of measurement, procedures for recording observations, and the dimensions of teaching behavior studied. For the purpose of this study, teacher objectives, methods and expressions were selected as the dimensions of teacher verbal and non-verbal classroom behavior to be categorized. The approach was based on a familiar analytical system of determining the teacher's desired outcomes and the means utilized to achieve the outcomes. The purpose of this study was to develop an instrument which teachers could use in analyzing videotape recordings of their classroom behavior.

The idea for this instrument originated from the needs of the Teacher Self-Appraisal Research Project

\textsuperscript{13}Withall, \textit{loc. cit.}

\textsuperscript{14}Medley, \textit{loc. cit.}

\textsuperscript{15}Smith, \textit{loc. cit.}
operating in the Tucson Public Schools. A search of the related literature revealed that there was no entirely appropriate instrument suitable for the coding of teacher verbal and non-verbal classroom behavior from video recordings of classroom teaching. Thus, with the support of the Teacher Self-Appraisal research team, the task of developing an instrument was begun.

Statement of the Problem

It was the purpose of this study to modify and adapt an existing instrument for use in the coding of video recordings of verbal and non-verbal teacher classroom behavior.

Significance of the Problem

In reviewing research dealing with observational procedures and instrument development for the coding of teacher behavior, it was obvious that differences existed in the various systems of describing teacher behavior. There has been a tendency to accord little emphasis to a logical theory or rationale which would reflect that which is known about society, the teacher, and the teaching process.

The aspects of teaching behavior that have been studied tend to be viewed as if they were independent of the context within which they occur. Thus, factors such as core values, role expectations, subject matter content,
the institution, and the socialization process all forcefully shape or influence teaching behavior, and are often ignored. Rarely have these factors been incorporated within the instrument in such a way that the description of teaching behavior could be viewed within a logical framework.

Generally, the observational procedures which have been developed were not designed for self-appraisal purposes. It appeared there was a definite need for some type of instrument which would permit teachers to analyze and describe their classroom behavior, utilizing video recordings of their teaching.

Definitions of Terms

The following definitions apply throughout this work:

**Teacher Self-Appraisal Research Project.** A project funded by the Elementary and Secondary Education Act, 1965, Title I. An experimental in-service training program sponsored by the Tucson Public Schools, involving 40 intermediate grade teachers. The teachers were given an opportunity to view video recordings of their classroom behavior and analyze the recordings by utilizing a specially developed observational system.

**Teacher Classroom Behavior.** All teacher verbal and non-verbal activities in the classroom.
Teaching. An interactive process, primarily involving classroom talk between teacher and pupils which occurs during certain definable activities. The teaching activities include: motivating, planning, informing, leading discussion, disciplining, counseling, and evaluating.

Teacher Objectives. Teacher statements of anticipated changes in student behavior as a result of selected classroom experiences.

Teacher Methods. Procedures followed, or the pattern of acts, utilized by the teacher that are designed to facilitate the attainment of certain objectives or desired outcomes.

Teacher Expressions. The communication of thought or feeling from one person to another through gesture, posture, facial expression, tone of voice, as well as by speech.

Teacher Verbal Behavior. Oral communication from the teacher to the student, viewed as "teacher talk."

Teacher Non-Verbal Behavior. Inaudible communication from the teacher to the student, viewed as the "silent language."

Instrument. A classification system for recording teacher or student behaviors.

\[\text{16 Amidon, op. cit., p. 1.}\]
**Video Recorder.** Ampex models 6000 and 7100 video units that record audio and video information on magnetic tape for instant playback.

**Video Recordings.** Classroom activities reproduced on one inch magnetic tape, for playback and analysis on the Ampex Video Recorder.

Organization of the Study

The report of this study was organized as follows. A review of relevant literature was presented in Chapter II. The rationale of the study was discussed in Chapter III, followed by the presentation of the modified instrument in Chapter IV. The procedures used in the instrument development were presented in Chapter V, with Chapter VI containing the summary, conclusions, and the implications of the study.

Summary

Many attempts have been made to develop some systematic observational system that would permit the collection of data about teacher classroom behavior for the purpose of describing and analyzing the teaching act. Thus far, little attention has been directed to involving the teacher in the analysis of the teaching act. This has resulted from a lack of suitable equipment for visual recording of teacher classroom behavior.
The recent development of the video recorder has provided the means for accomplishing this task. Employing the video recorder to capture and preserve teacher behavior and the computer to process the data, affords an unparalleled opportunity for the systematic analysis of the teaching act. New technology and the concept of teacher self-appraisal now makes it feasible for the individual teacher to study and analyze his performance in the classroom.

In the chapter which follows, a review of selected literature related to the development of systematic observational procedures was presented.
CHAPTER II

REVIEW OF RELATED LITERATURE

The discussion of selected related literature is divided into five sections: (1) development of instruments for the assessment of teacher characteristics and skills, (2) systematic procedures developed to observe psychological climate or classroom interaction, (3) development of instruments that attempt to provide a quantitative description of teaching behavior, (4) development of instruments for the systematic observation of the cognitive aspects of teaching, (5) development of observation systems for the coding of non-verbal classroom behavior.

Literature Pertaining to the Development of Instruments for the Assessment of Teacher Characteristics and Skills

Numerous instruments and rating scales have been developed in an attempt to analyze teacher personality, characteristics, and their relationship to teaching effectiveness. A major limitation of many of the instruments reviewed in this study is the lack of category definitions and discussions of behaviors observed.
According to Gage\(^{17}\) it may be assumed that whatever effect a teacher has on pupils must result from his behaviors, it is only necessary to identify the crucial behaviors, record them, and score them to measure effectiveness in the process.

**Barr: Characteristics of Good and Poor Teachers**

Barr\(^{18}\) developed an instrument containing twenty categories that attempted to identify characteristic actions of good and poor teachers. The purpose of the instrument was to classify behavior as it happens according to the type of teacher-pupil activity, means of motivation, material and equipment in evidence in the classroom. A sheet of graph paper was used as a code sheet, marked at ten second intervals. Abbreviations were used to indicate the type of activity observed (T—teacher, C—teacher comment, X—teacher's question, Pq—pupil's question, H—hand raised, 3H—number of hands raised, Vc—volunteer's comment).

Pupils in the classroom were assigned numbers and were coded by number for identification. Various horizontal lines were drawn to indicate the length of activity, number of pupils attentive, and explanatory comments upon


the activity in progress. Forty minute segments of classroom activity were chosen as data samples for analysis.

Little evidence is available concerning the reliability established on the use of the instrument. Furthermore, there was apparently little effort to intercorrelate the categories or condense them into related groups of items.

Jayne: Index of Meaningful Discussion and Immediate Recall

Jayne\(^\text{19}\) developed an observational scale comprised of two categories. One category was called the "Index of Meaningful Discussion" and contained seven items:

1. Per cent of fact questions on unprepared material.
2. Per cent of thought questions on unprepared material.
3. Per cent of thought questions dealing with local situations.
4. Number of participations growing out of spontaneous pupil discussion.
5. Number of teacher explanations.
6. Number of times teacher presented factual information.

7. Times teacher raised a question as to correctness of a pupil response.

The other category was called the "Index of Immediate Recall" and contained four items:

1. Questions demanding recall of specified fact.
2. Number of factual questions on prepared material.
3. Number of times teacher indicated answer right.
4. Number of thought questions on prepared material.

The system was devised to be used with sound recordings of lessons, rather than direct classroom observation. This attempt to develop a systematic observational procedure produced evidence that sometimes individual items which do not differentiate between teachers or classes can often be combined into scales or categories which do.

Morsh: Air Force Instructor Rating Scale

In an attempt to develop an instrument that could be used by airman observers without previous training or experience in rating Air Force instructors, Morsh\textsuperscript{20} constructed a scale containing 160 items. The scale contained three categories: (1) instructor verbal behavior, (2) instructor non-verbal behavior, and (3) student behavior.

Reliability coefficients ranging from .30 to .68 were established on forty-five minute observations in 120 classrooms, by three trained observers.

Domas and Tiedman: Bibliography of Teacher Personality Scales

Domas and Tiedman\(^{21}\) prepared a bibliography containing numerous studies and attempts to rate, categorize, or classify teacher characteristics and their relation to teacher competence. Another excellent bibliography by Barr\(^{22}\) listed studies related to teacher personality traits.

Ryans: Teacher Characteristics Scale

The ten year study of teacher characteristics and skills completed by Ryans\(^{23}\) is probably the most comprehensive attempt to develop an observation record form and a glossary of operational terms describing the behaviors to be assessed. In its final form after a number of revisions, the classroom observational record included four dimensions of pupil classroom behavior and eighteen dimensions of teacher behavior.


\(^{23}\) Ryans, *loc. cit.*
Dimensions of teacher behavior included: (1) harsh-kindly-, (2) systematic-unplanned, (3) stimulating-dull, and (4) warm-alooof. Dimensions of pupil behavior included: (1) apathetic-alert, (2) dependent-initiating, and (3) uncertain-confident. These specific dimensions of teacher and pupil behavior were constructed on a polar design with the left pole (harsh) assigned the value of one, and the right pole (kind) assigned the value of seven.

Direct observations and assessments by trained observers produced reliabilities that ranged from .70 to .80. Although this study aroused great interest in the study of teacher characteristics, the observational record carries with it the common difficulties of complexity and the ambiguous description of teacher behaviors that are not appropriate to all teachers.

Summary

The years of extensive effort to devise some systematic means of observing teacher characteristics and their relation to teaching is summarized by Getzels and Jackson:

> Despite the critical importance of the problem and a half-century of prodigious research effort, very little is known for certain about the nature of teacher characteristics.

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and measurement of teacher personality, or about the relation between teacher personality and teaching effectiveness. The regrettable fact is that many of the studies so far have not produced significant results. Many others have produced only pedestrian findings. For example, it is said after the usual inventory tabulation, that good teachers are friendly, cheerful, sympathetic, and morally virtuous rather than cruel, depressed, unsympathetic and morally depraved. But when this has been said, not very much that is especially useful has been revealed. For what conceivable human interaction—and teaching implies first and foremost a human interaction—is not the better if people involved are friendly, cheerful, sympathetic, and virtuous rather, than the opposite? What is needed is not research leading to the reiteration of the self-evident but to the discovery of specific and distinctive features of teacher personality and of the effective teacher.

Literature Pertaining to Systematic Procedures Developed to Observe Psychological Climate or Classroom Interaction

Thomas: Classroom Climate

The most active line of instrument development for the coding of teacher classroom behaviors has been in the area of classroom climate. This line of development apparently began with Thomas et al. in 1929, who made a definite break with the then current rating procedures. Emphasis was placed on interactions between individuals as contrasted with actions involving material objects or self.

The observation schedules were used to record the number of social contacts, physical contacts, vocal contacts and social group functions that included the size of group and the time spent in the group. Observer reliability ranged from .47 to .80. One criticism of this observational technique is the overemphasis on seemingly high reliability between observers. Accuracy of observation was taken as a prerequisite to quantification. This concept has remained with most of the research in direct observation conducted since Thomas's day, but is not a major prerequisite for the instrument developed in this study.

Anderson: Dominative and Integrative Teacher Behavior

Anderson,26 in 1938, developed an observational system for coding teacher classroom behavior in terms of teacher contacts. Twenty-three categories were arbitrarily defined for convenience in recording. The instrument was designed to permit the recording of teacher dominative and integrative behavior from the contacts which teachers had with kindergarten children. The observation blank was devised to contain five minute observations. Two observers, working independently, established reliabilities ranging from .77 to .97. This effort to build an

observational schedule provided the experience base that enabled Anderson to construct a more refined instrument in later years.

Anderson et al.: Dominative and Integrative Teacher Behavior

Anderson, Brewer, and Reed,27 in 1946, developed from Anderson's earlier efforts a method for observing teacher and pupil behavior simultaneously. The principal object of observation was to record interaction, pupil-pupil or pupil-teacher.

Behavior was recorded as contacts and divided into two dimensions: (1) "Dominative Teacher Behavior," and (2) "Integrative Teacher Behavior." "Dominative Teacher Behavior" included the following categories: (1) domination with evidence of conflict, (2) domination with no evidence of conflict, and (3) domination in working together. "Integrative Teacher Behavior" included the following categories: (1) integration with no evidence of working together, (2) integration with evidence of working together. A third dimension was later added, that of "Pupil Behavior," which was not recorded as dominative

or integrative, but was used to detect possible effects of teacher behavior on pupils.

Records were made, for a five minute period of the behaviors of one child at a time and of the contacts between the teacher and the selected child. Children were listed alphabetically and observed in order. The observations were continued until two hours of observations were made on each child. Each teacher was therefore observed for a number of hours equal to twice the number of pupils in her class. Reliability studied by item in terms of observer agreement was generally high.

Withall: Classroom Climate Index

Withall,28 in 1949, developed the "Social-Emotional Climate Index," a method for coding typewritten transcripts of teacher classroom behavior. Withall postulated that learning (changes in behavior) is most likely to occur in a non-threatening situation. It was decided therefore to develop a technique to measure social-emotional climate in the classroom through a categorization of typescripts of teachers' statements.

Three dimensions were devised with the following categories:

28Withall, loc. cit.
<table>
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<tr>
<th>Learner Centered</th>
<th>Neutral</th>
<th>Teacher Centered</th>
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<tr>
<td>1. Learner-supportive</td>
<td>1. Directive</td>
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<tr>
<td>2. Acceptant and</td>
<td>2. Reproving</td>
<td></td>
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<tr>
<td>clarifying</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Problem-structuring</td>
<td>3. Teacher self-supporting</td>
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Reliability coefficients ranged from .25 to .90 in the three dimensions and .47 to .97 within the categories.

Mitzel et al.: Classroom Climate Index

A variation of the Withall technique was introduced by Mitzel and Rabinowitz, in 1953. This instrument focused on teacher statements in order to show relationship between emotional-social climate and teacher effectiveness. This system also included the classification of teacher expressive non-verbal behaviors.

The five categories and their established reliabilities are reported as follows: (1) problem-structuring, .79; (2) directive, .51; (3) reproving, .87; (4) supportive, .71; and (5) non-verbal expressions, .91. The addition of teacher non-verbal expressions indicated that such behaviors can be classified more reliably than teacher verbal statements.

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Bales: Interaction Analysis

Bales,\textsuperscript{30} in 1950, developed a method for coding behavior in group problem solving. The observation procedure contained four classes of conditions, each containing three categories:

**Social-Emotional Area Positive Reactions**
1. Shows solidarity.
2. Shows tension release.
3. Agrees.

**Task Area Attempted Answers**
1. Gives suggestion.
2. Gives opinion.

**Task Area Questions**
1. Asks for information.
2. Asks for opinion.
3. Asks for suggestion.

**Social-Emotional Area Negative Reactions**
1. Disagrees.
2. Shows tension.
3. Shows antagonism.

The system was used in twenty-two sessions of staff conferences, committees, and similar groups dealing with

the problems of analysis and planning with the goal of
group decision. No reliability factor was reported from
the use of the instrument by the observers.

Flanders: Classroom Interaction Scale

One of the best known systems for examining the
verbal interaction between teacher and pupils was developed
by Flanders\(^\text{31}\) in 1959. All teacher-pupil interaction was
divided into ten categories; seven of teacher talk, two of
student talk, and one of silence or confusion.

Teacher talk is recorded under one of two major
headings: (1) indirect influence, and (2) direct influence.
Indirect influence contains four categories, and direct
influence contains three categories. Included in the
classification of indirect teacher influence are teacher
statements that: (1) accepts feeling, (2) praises or
encourages, and (3) accepts or uses ideas of student.
Direct teacher influence refers to teacher statements
which: (1) ask questions, (2) lectures, (3) gives direc-
tions, and (4) criticizes or justifies authority. Student
talk is divided into two categories: (1) student talk in
response to the teacher, and (2) student talk initiated by
the student. The remaining category of silence or

\(^{31}\)Ned A. Flanders, Teacher Influence, Pupil Atti-
tudes, and Achievement, U. S. Office of Education Coopera-
tive Research Project No. 397 (Minneapolis: University of
Minnesota, 1960). (Mimeographed.)
confusion is to allow the coder to account for every minute of the time spent in the systematic observation of teacher classroom behavior.

This observational procedure has been used in direct classroom observation and with audio-tape recordings of classroom talk. Observers are trained to code every three seconds, and reliability coefficients ranging from .88 to .96 have been established. This system is limited to use only when the student and the teacher are engaged in verbal interaction.

This system cannot be utilized in situations which make it unnecessary for the teacher to talk. The Flanders' system of Interaction Analysis, although not the final answer, appears to have potential as a tool for research in the teaching process.

Hughes et al.: Utah Code

Hughes et al.,32 in 1959, developed a system of categorizing the teacher-learner situation from the analysis of 1,000 typed transcripts of sixty teachers in both elementary and secondary schools. Seven comprehensive categories, containing thirty-three functions were organized for the classification of teacher behavior:

32Hughes et al., loc. cit.
<table>
<thead>
<tr>
<th>Controlling Functions</th>
<th>Imposition of Teacher</th>
</tr>
</thead>
<tbody>
<tr>
<td>Structure Regulate</td>
<td>Regulate Inform self</td>
</tr>
<tr>
<td>Standard Judge</td>
<td>Moralize Inform</td>
</tr>
<tr>
<td>Facilitating Functions</td>
<td>Functions that Develop</td>
</tr>
<tr>
<td>Checking Demonstrate</td>
<td>Resource Clarify</td>
</tr>
<tr>
<td>Clarify Procedure</td>
<td>Stimulate Evaluate</td>
</tr>
<tr>
<td>Functions That Serve as Response</td>
<td>Structure Content Agree</td>
</tr>
<tr>
<td>Meets Request Interprets Personal Clarify</td>
<td>Functions of Positive</td>
</tr>
<tr>
<td></td>
<td>Affectivity Support</td>
</tr>
<tr>
<td></td>
<td>Solicitous</td>
</tr>
<tr>
<td></td>
<td>Encourage Does for</td>
</tr>
<tr>
<td></td>
<td>Personal</td>
</tr>
<tr>
<td>Functions of Negative Affectivity</td>
<td>Admonish Negative</td>
</tr>
<tr>
<td></td>
<td>Response</td>
</tr>
<tr>
<td></td>
<td>Reprimand Verbal</td>
</tr>
<tr>
<td></td>
<td>Futuristic</td>
</tr>
<tr>
<td></td>
<td>Accusative Ignore</td>
</tr>
<tr>
<td></td>
<td>Threat</td>
</tr>
</tbody>
</table>

These categories are similar to Withall's except that Hughes did not restrict her system to verbal behavior. This system was devised to code typed transcripts of teacher-pupil classroom behavior. The transcripts contained not only a record of the verbal communication, but
also a description of the teacher's non-verbal behavior. Coding was done by two independent workers and checked by a third to eliminate disagreements.

Accuracy of coding was assessed by recording a twenty per cent sample of 105 observation periods and calculating the percentage of agreement between the two codings. An outcome of the study was a model for teacher behaviors which was presumed to produce an optimum interaction pattern for learning in the elementary school:

<table>
<thead>
<tr>
<th>Controlling Behaviors</th>
<th>20-40 per cent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Imposition</td>
<td>1-3 per cent</td>
</tr>
<tr>
<td>Facilitating Behaviors</td>
<td>5-15 per cent</td>
</tr>
<tr>
<td>Content Development Behaviors</td>
<td>20-40 per cent teacher</td>
</tr>
<tr>
<td>Personal Response Behaviors</td>
<td>8-20 per cent behavior</td>
</tr>
<tr>
<td>Positive Affectivity Behaviors</td>
<td>10-20 per cent</td>
</tr>
<tr>
<td>Negative Affectivity Behaviors</td>
<td>3-10 per cent</td>
</tr>
</tbody>
</table>

An overall observer reliability of .84 was established, with the following category reliabilities:

<table>
<thead>
<tr>
<th>Category</th>
<th>Reliability</th>
</tr>
</thead>
<tbody>
<tr>
<td>Content Development</td>
<td>.85</td>
</tr>
<tr>
<td>Imposition</td>
<td>.63</td>
</tr>
<tr>
<td>Facilitating Functions</td>
<td>.72</td>
</tr>
<tr>
<td>Controlling</td>
<td>.89</td>
</tr>
<tr>
<td>Response</td>
<td>.75</td>
</tr>
</tbody>
</table>
Positive Affectivity  .85
Negative Affectivity  .81

Although Hughes et al. have developed a rather complex instrument to specifically describe many of the complexities of teaching, the system accounted for a wider range of teacher classroom behaviors than any previous classification system.

Bellack et al.: Teacher and Pupil Classroom Roles

Bellack and Davitz, in 1963, devised a system of observation to classify teacher-pupil activity in the classroom. The dimensions of this system are "Teacher Role" and "Pupil Role." The dimensions of "Teacher Role" include the following categories: (1) structuring, (2) soliciting, (3) reacting, and (4) responding. The dimension of "Pupil Role" includes the same four categories as the dimension of "Teacher Role." This instrument attempts to identify and analyze teaching cycles in order to account for the pedagogical moves in the discourse of any class. Thus, teaching styles such as questioning and answering could readily be identified. No observer reliability or agreement was reported.

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Spaulding: Classroom Interaction

Spaulding, in 1964, devised the "Transaction Sample: Classroom" (TSC) observation and tape analysis schedule to classify teacher behavior in the elementary school setting. The schedule constitutes a modification of an earlier form entitled the "Interaction Sample: Teacher" (IS-T) devised by Richard Alpert and Margaret Pintler at the Laboratory of Human Development, Stanford University. The modifications extended the categories of analysis to include additional dimensions of transaction, such as the expression of authority and the publicity of communication as well as to facilitate its use with audio-tape recordings. The TSC was used to sample teacher behavior in the classroom of intervals varying in length from 10 seconds to 90 seconds.

The TSC is made up of four dimensions: (1) approving, (2) disapproving, (3) instructing, and (4) listening. Each dimension contains the following categories: (1) activity, (2) molar behavior, (3) source, (4) direction, (5) child identification, (6) publicity, (7) tone, (8) technique, and (9) regarding. This system can be used to classify both verbal and non-verbal

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classroom behaviors. Coefficients of reliability between observers ranged from a low of .47 for approving and disapproving behaviors, to a high of .92 for instructing and listening. The approach taken by this instrument was to identify, at the moment of transaction, the specific types of behavior of the pupils which elicited specific types of teacher behaviors.

Amidon et al.: Classroom Interaction

Amidon and Hunter, in 1965, developed the "Verbal Interaction Category System" (VICS) to help teachers and prospective teachers become aware of the importance of verbal behavior in the classroom. The system is based upon the Flanders' system, but has been further developed to overcome some of the limitations.

The Amidon system contains five categories for analyzing verbal classroom behavior: (1) teacher initiated talk, (2) teacher response, (3) pupil response, (4) pupil initiated talk, and (5) other.

According to Amidon, some primary differences between the Flanders' system and the Amidon system are: (1) direct teacher influence is not a dimension in the Amidon system, (2) the Amidon system allows teacher questions to be categorized into those which are broad and those which are narrow in scope, (3) the Amidon system

35 Amidon, loc. cit.
distinguishes between the conversation which a pupil has with the teacher and that which he has with another pupil, (4) the Flanders' system has one category to indicate silence and confusion, while the Amidon system separates these two, (5) the Amidon system has seventeen items in contrast to Flanders' ten, thus making it more difficult to use at three second intervals.

The VICS has particular utility in the field of teacher education, where it can provide teachers with verbal patterns of their teaching behaviors, thus providing a system of analyzing and describing teacher verbal behavior.

Openshaw: Teacher Classroom Functions

Openshaw et al., in 1965, developed a taxonomy for the classification of teacher classroom behavior, that would account for the observable dimensions of interaction in the classroom. The basic component of teacher behavior classified in this system was referred to as an encounter. The encounter was defined as a unit of teacher behavior that served a discernible function within a teaching situation. An encounter began when a function was observed.

Five functional dimensions containing twenty-three categories were organized:

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36 M. Karl Openshaw et al., The Development of a Taxonomy for the Classification of Teacher Classroom Behavior, U. S. Office of Education Cooperative Research Project No. 2288 (Columbus, Ohio: Ohio State University Research Foundation, 1966), pp. 36-55.
<table>
<thead>
<tr>
<th>Structure</th>
<th>Develop</th>
<th>Evaluate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Initiate</td>
<td>Test</td>
<td>Appraise</td>
</tr>
<tr>
<td>Order</td>
<td>Elicit</td>
<td>Opine</td>
</tr>
<tr>
<td>Assign</td>
<td>Check</td>
<td>Stereotype</td>
</tr>
<tr>
<td></td>
<td>Inform</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Explain</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Summarize</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Reinforce</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Stimulate</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Administer</td>
<td>Regulate</td>
<td></td>
</tr>
<tr>
<td>Manipulate</td>
<td>Set Standard</td>
<td>Inquire</td>
</tr>
<tr>
<td>Manage Material</td>
<td>Support</td>
<td>Assist</td>
</tr>
<tr>
<td>Proctor</td>
<td>Restrict</td>
<td>Monitor-Self</td>
</tr>
</tbody>
</table>

The observed behaviors were recorded at fifteen second intervals, with observer reliabilities ranging from .76 to 1.00 within the categories. This system includes several modifications of the Hughes categories that were more adaptable to the direct observation of teacher classroom behavior.

MacDonald: Verbal Interaction Continuum

MacDonald,\(^{37}\) in 1966, devised the "Classification of Verbal Behavior" in the classroom system to examine classroom interactions from the viewpoint of the process continuum of openness as contrasted with defensive and/or compensatory behavior. The instrument was tested to see if classroom behavior can be reliably identified, categorized, and analyzed in these terms.

\(^{37}\)MacDonald, \textit{loc. cit.}
The system was constructed to be used with transcribed tape recordings of classroom interactions, thus it was limited to the recording of verbal behavior. The instrument categories included critical incidents of classroom verbal behavior such as: (1) teacher role-learner reproductive, (2) teacher role-learner productive, (3) teacher transaction-learner reproductive, and (4) teacher transaction-learner productive. Agreement was reached on 141 out of 174 statements or on 81% of the verbal behaviors observed.

MacDonald et al.: Teacher-pupil Classroom Interaction

MacDonald, Allen, and Orme, in 1966, constructed an observational schedule for the coding of video-tape recordings of intern teachers' classroom behavior. The dimensions of behavior studied were: (1) teacher responses, and (2) teacher-pupil interaction. The dimension of "Teacher Responses" contained the categories of: (1) positive reinforcement, and (2) negative reinforcement. The dimension of teacher-pupil interaction included the following categories: (1) pupil initiated, and (2) teacher initiated. Seventeen sub-categories were also included in the observation schedule.

38 Frederick J. MacDonald, Dwight W. Allen, and Michael E. Orme, "The Effects of Self-Feedback and Reinforcement on the Acquisition of a Teaching Skill" (Stanford University, 1966). (Mimeographed.)
Observers coded 269 twenty-minute video-tape recordings of intern teacher classroom behavior. Reliability coefficients within categories ranging from .87 to 1.00 were reported. This instrument is one of the first to attempt to provide feedback via video-tape recordings of teacher's performance, to improve instruction.

Miller: Analysis of Teaching

Miller, in 1966, constructed the "Collaboration Scale for the Analysis of Teaching" to analyze teaching according to the "Responsive-Directive" dimension. The primary functions performed by teachers in the "Responsive-Directive" dimension includes: (1) providing focus, (2) development of content, (3) giving information directly, (4) appraising effort, and (5) facilitating functions which are considered to be neutral on the "Responsive-Directive" dimension.

The instrument was used to identify teaching functions by examining transcripts of classroom teaching as recorded on audio-tapes. Miller's dimensions are very similar to MacDonald's openness-defensive dimension, and his primary functions bear a close resemblance to the functions described by Hughes.

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Summary

The dimensions of teacher classroom behavior referred to as psychological climate have focused on the task of identifying effective teacher behaviors in classroom interaction. In the past few years researchers have attempted to construct instruments that describe certain teacher verbal behaviors. Attempts to conceptualize teacher behavior in the classroom have resulted in various approaches, with the model of teacher-activity versus the learner-activity being the most common. The choice of concept by the investigator either diminishes or expands the degree of complexity of a system for the analysis of teacher classroom behavior, thus establishing limits to the data gathering effectiveness of the instruments.

Literature Pertaining to the Development of Instruments that Attempt to Provide a Quantitative Description of Teaching Behavior

Cornell: Classroom Differences

Several instruments that focus on the quantitative description of teacher behavior have been developed in the past few years. Cornell, Lindvall, and Saupe, in 1952, developed the "Classroom Observation Code Digest," a classification system of eight dimensions used to measure teacher behavior.

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differences in classrooms as a means of characterizing differences between school systems.

The eight dimensions of classroom behavior recorded were: (1) differentiation, (2) social organization, (3) initiative, (4) content, (5) variety, (6) competency, (7) climate-teacher, and (8) climate-pupils. These dimensions contained 82 items of observable teacher-pupil behavior.

A system of scoring was developed which yielded a single score for each dimension except competency. The reliability coefficients reported ranged from .42 to .89.

Medley and Mitzel: Measurement of Classroom Climate

Using the work of Cornell et al., Medley and Mitzel, in 1955, developed an instrument called the "Observation Schedule and Record" (OScAR) for use in the follow-up study of teacher education graduates. OScAR was designed to provide quantitative data regarding the classroom behaviors of beginning teachers for correlation with a number of other variables. The instrument was designed to be used by a single observer in the classroom.

The instrument contained the following dimensions: (1) emotional climate, (2) verbal emphasis, (3) social organization. Behaviors were recorded during the first, third, and fifth five minute periods of a half-hour visit

\[41^4\text{Ibid.}\]

\[42^4\text{Medley, loc. cit.}\]
timed by a stop watch. The three dimensions contained six sections: (1) the Activity Section contains 50 items, (2) the Grouping Section includes 7 items, (3) the Sign Section contains 11 items, (4) the Subject Section has 10 items, (5) the Materials Section contains 11 items, and (6) the Expressive Behavior Section includes 8 items. Reliabilities of the sections ranged from .61 to .92.

Medley and Mitzel et al.: Modifications of the OScAR

The OScAR has been revised several times, Medley and Mitzel,43 Schueler, Gold, and Mitzel,44 and Medley,45 each time it was designed to fit the needs of a particular research project. Medley, Impellitteri, and Smith46 revised the OScAR in 1966 so that verbal behaviors in the classroom could be classified to provide information relevant to a number of important research questions. The


44H. E. Mitzel, M. J. Gold, and H. Schueler, "The Use of Television for Improving Teacher Training and for Improving Measures of Teacher Performance: Phase I, Improvement of Student Teaching" (Hunter College of the City University of New York, 1962). (Mimeographed.)


46Donald Medley, Joseph Impellitteri, and Lou Smith, "Coding Teachers' Verbal Behavior in the Classroom: A Manuel for the Users of OScAR 4V" (Hunter College of the City University of New York, 1967). (Mimeographed.)
system contains 50 categories of verbal behavior arranged on an observation blank for convenience in recording.

A study of the classification system reveals that in order to record behavior it is only necessary to pay attention to verbal behaviors. Pupil utterances are merely tallied and not classified. The instrument is designed for a single observer to record classroom behavior for periods of three, five, or ten minutes. It appears that the OScAR 4V might be enlarged to provide some means of classifying pupil statements, or to discriminate more kinds of non-substantive interactions.

Summary

The attempt to quantify teacher behaviors is of significance, in that it attempts to relate quantified teacher behaviors to the measurement of teacher needs. Systems thus far discussed have been designed to contain categories for the quantifying and analyzing observed behavior rather than classifying the cognitive aspects of teaching. It is probably important to note that the more successful instruments have been non-cognitively oriented.

Literature Pertaining to the Development of Instruments for the Systematic Observation of the Cognitive Aspects of Teaching

Recently, the efforts of researchers have focused on the systematic observation of teaching behavior as
related to the achievement of cognitive objectives. In the cognitive domain such objectives as knowledge, comprehension, ability to analyze, synthesize, and evaluate have been utilized.

Guilford: Intellectual Rating Scale

Guilford, in 1956, devised a system that would permit the classifying of intellectual operations by which students reach answers to questions. Also included were general areas in which persons solve problems. The system was used to categorize typed transcripts of classroom behavior into the following categories: (1) cognitive-memory, (2) convergent, (3) divergent, and (4) evaluative. Information pertaining to observer reliability and observation procedures was not reported in this initial effort.

Smith et al: Concepts Relative to Teaching Behavior

Smith and Meux, in 1959, attempted to identify and describe the explanatory and valuative dimensions of teaching behavior in order to study the concepts and principles relevant to teaching behavior. An observation system for coding typed transcripts which divided verbal teacher behavior into pedagogical units for analysis was


\[48\] Smith, loc. cit.
devised. The instrument was used to describe and analyze the molar aspects of teaching in a logical manner as they were verbally performed.

Thirteen categories and sub-categories were developed that described the verbal episodes. The categories and their observer reliabilities were listed as follows:

1. Defining, 5 types, .84
2. Describing, .61
3. Designating, 5 types, .71
4. Stating, .63
5. Reporting, .33
6. Substituting, .88
7. Valuating, .60
8. Classifying, .70
9. Conditioning, Inferring, .67
10. Explaining, 6 types, .84
11. Directing and Managing Classroom, .87
12. Opining, .73
13. Comparing and Controlling, .62

Smith indicated the following difficulties of the instrument: (1) categories tend to overlap, (2) category definitions do not discriminate adequately between categories, and (3) verbal cues enable coders to involve varying degrees of inference within the system. This
system assumes that if the teacher's verbal behavior is marked by vagueness, ambiguity, and by inconsistencies in reasoning, it would seem reasonable to conclude that his effectiveness as a teacher is low.

Aschner: Analysis of Thought Processes in the Classroom

Aschner and Gallagher, in 1961, developed a system for classifying thought processes in the context of classroom verbal interaction, from typed transcripts. Five dimensions of classroom behavior were included with the following categories:

<table>
<thead>
<tr>
<th>Routine</th>
<th>Cognitive-Memory</th>
</tr>
</thead>
<tbody>
<tr>
<td>Management, 7 types</td>
<td>Scribe</td>
</tr>
<tr>
<td>Structuring, 4 types</td>
<td>Recapitulation, 2 types</td>
</tr>
<tr>
<td>Verdict, 7 types</td>
<td>Clarification, 2 types</td>
</tr>
<tr>
<td></td>
<td>Factual, 3 types</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Convergent Thinking</th>
<th>Evaluative Thinking</th>
</tr>
</thead>
<tbody>
<tr>
<td>Translation</td>
<td>Unstructured</td>
</tr>
<tr>
<td>Association</td>
<td>Structured</td>
</tr>
<tr>
<td>Explanation</td>
<td>Qualification</td>
</tr>
<tr>
<td>Conclusion</td>
<td></td>
</tr>
</tbody>
</table>

| Divergent Thinking    |                                   |
|-----------------------|                                   |
| Elaboration           |                                   |
| Divergent Association |                                   |
| Implication           |                                   |
| Synthesis             |                                   |

Observer reliabilities ranging from .69 to .79 were reported. Observation procedures for the use of the classification system were not described.

Wright et al.: Subject Matter Mastery, as Key to Classroom Behavior

Wright and Proctor, in 1961, categorized behaviors in the teaching-learning situation according to the essential aspects of language. They assumed that the key aspect of the classroom is the student's mastery of particular subject matter. This system for the classification of verbal behaviors was devised to be used in high school mathematics classes.

Three dimensions of behavior were featured in this system: (1) mathematical content, (2) psychological process, and (3) sociological attitude. The outline of the system includes the following categories:

<table>
<thead>
<tr>
<th>Content Frame</th>
<th>Process Frame</th>
</tr>
</thead>
<tbody>
<tr>
<td>Structure, 4 types</td>
<td>Analyze, 4 types</td>
</tr>
<tr>
<td>Techniques, 2 types</td>
<td>Synthesis, 2 types</td>
</tr>
<tr>
<td>Deductive</td>
<td>Specializing, 4 types</td>
</tr>
<tr>
<td>Inductive</td>
<td>Generalizing, 2 types</td>
</tr>
<tr>
<td>Statement</td>
<td>Relevant, 2 types</td>
</tr>
<tr>
<td>Mathematical</td>
<td></td>
</tr>
<tr>
<td>Other, 5 types</td>
<td></td>
</tr>
</tbody>
</table>

Attitude Frame
Curiosity, 4 types
Independence, 6 types
Receptivity, 5 types

Observations of 45 minutes were selected and divided into 15 second intervals. Verbal interactions were observed for 15 seconds, then classified during the next 15 seconds, during which interactions were not observed. Each 45 minute class session yielded two tallies per minute for a total of 90 classifications per session.

Observer agreement was reported by calculating chi square values, and found to be satisfactory. The problem that emerges from the use of this classification system is the high level of observer training required both in mathematics and behavior observation.

Bellack: Game Theory Approach

Bellack et al., in 1963, devised a system for classifying teaching behavior as game theory in the sense that it is rule-governed behavior. The system was used to identify the rules of teaching, with descriptions of the respective roles that students and teachers play in the classroom. The system was used with typescripts of classroom behavior.

Bellack, loc. cit.
The instrument contained the following dimensions and categories of classroom behavior:

<table>
<thead>
<tr>
<th>Pedagogical Moves</th>
<th>Classroom Talk</th>
</tr>
</thead>
<tbody>
<tr>
<td>Structuring</td>
<td>Substantive meanings</td>
</tr>
<tr>
<td>Soliciting</td>
<td>Instructional meanings</td>
</tr>
<tr>
<td>Responding</td>
<td></td>
</tr>
<tr>
<td>Reacting</td>
<td></td>
</tr>
</tbody>
</table>

**Emotional Meaning**

- Valence
- Strength
- Activity

No observer reliabilities or observation procedures were reported with this classification system.

Taba et al.: Cognitive Skills Approach

Taba et al., in 1964, modified an earlier system to include a new verbal unit, the strategy. Other units, the venture and the move, were used to clarify and identify the concept of teaching strategy. Strategies are defined as involving goals and the ways teachers behave in achieving such goals. No reliabilities or procedures were reported.

Mork: Classification of Cognitive Skills

Mork et al., in 1965, developed the "Classroom Verbal Reaction Behavior Log" for classifying the cognitive, skill, and affective dimensions of teacher behavior. The

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52 Taba et al., loc. cit.

53 Gordon Mork et al., "Classroom Verbal Reaction Behavior Log, Form C" (Minneapolis: University of Minnesota College of Education, 1966). (Mimeographed.)
The system was devised to be used in the direct observation of classroom behavior. The system contains three dimensions and nine categories of teacher behavior:

<table>
<thead>
<tr>
<th>Cognitive</th>
<th>Skill</th>
<th>Affective</th>
</tr>
</thead>
<tbody>
<tr>
<td>Facts</td>
<td>Directions</td>
<td>Identification</td>
</tr>
<tr>
<td>Generalizations</td>
<td>Repetitive</td>
<td>Supportive</td>
</tr>
<tr>
<td>Applications</td>
<td>Varied</td>
<td>Negative</td>
</tr>
</tbody>
</table>

Observer reliabilities and observation procedures were not reported.

Summary

It appears, from the attempts of researchers in the development of systematic observation procedures for the study of cognition and its relation to the teaching-learning process, that a variety of techniques for data collection must be developed before this answer can be found. There appears to be a need for follow-ups that would include a more detailed study of pedagogical moves, definitions for more distinct discriminations of classroom behavior, and a further study of the logical thought processes.

**Literature Pertaining to the Development of Observation Systems for the Coding of Non-Verbal Classroom Behavior**

Most systems of classifying teacher classroom behavior were devised to focus upon the teacher's verbal behavior, while occasionally including an approach that
does account for some types of non-verbal behavior. A few investigators have focused on the systematic classification of teacher non-verbal classroom behavior. The following review is presented in order to acquaint the reader with the instruments that served as sources in constructing the categories of non-verbal behavior for this study.

Sapir: Analysis of Voice Tone

Sapir,¹⁴ in 1927, classified five levels of speech dynamics which were considered relevant to non-verbal behavior: (1) voice-timbre; (2) voice dynamics-intonation, rhythm and speed; (3) pronunciation-pauses, variation, and inflection; (4) vocabulary-word selection; and (5) style-individual manner.

This system was used to study voice tone, and little attention was directed to gestural communication. A weakness of the system centered around the lack of emphasis on gestures as a major part of non-verbal behavior. Observer reliabilities and observation procedures were not reported.

Birdwhistell: Classification of Gestures

Birdwhistell,¹⁵ in 1954, attempted to develop a notation system of definitions for non-verbal gestures.


The system became too complex and unwieldy for use, and his attempt to train coders to use the system failed because of the elaborate and abstract nature of his notation system.

Katz: Description of Body Movements

Katz et al., in 1959, devised a system to record gestures, facial expressions, and postures of adolescents in group counseling sessions. Categories within each of these three dimensions included: (1) approach, (2) withdrawal, and (3) attack. The purpose of the instrument was simply to have categories that indicated positive and warm feelings, negative and hostile feelings, and feelings of withdrawal. Observer reliabilities and observation procedures were not reported.

Lewis: Description of Receptiveness and Responsiveness

Lewis, in 1961, devised an instrument that divided non-verbal behavior into two dimensions: (1) receptiveness, and (2) responsiveness. Receptiveness was defined as the expression of non-verbal cues such as the direction of one's vision, facial expression, and bodily

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posture which suggests to another that one is ready or willing to listen.

Receptiveness includes the non-verbal behaviors of a teacher that transmit to a pupil the message, "Lines of communication are open between us; I am interested in hearing what you have to say." Responsiveness refers to modifications in the teacher's behavior which reflect a perception of changing interests, feelings, and needs in the pupil. A teacher demonstrates responsiveness when he alters the pace of the lesson, makes a change in the lesson plan, or responds to expressed needs by altering the pattern of communication. Observation procedures and observer reliability were not reported.

Galloway: Classification of Non-verbal Communication in the Classroom

The most comprehensive effort to systematically observe teacher classroom non-verbal behavior was devised by Galloway\textsuperscript{58} in 1962. Three dimensions of non-verbal behavior were selected: (1) encouraging expressions that exhibit approval, (2) routine expressions that are a matter of form, and (3) inhibiting expressions that show strong disapproval. The following outline includes the dimensions, categories, and sub-categories of the instrument:

<table>
<thead>
<tr>
<th>Encouraging</th>
<th>Routine</th>
<th>Inhibiting</th>
</tr>
</thead>
<tbody>
<tr>
<td>Enthusiastic Support</td>
<td></td>
<td>Inattentive</td>
</tr>
<tr>
<td>Facial expression</td>
<td>Action</td>
<td>Facial expression</td>
</tr>
<tr>
<td>Vocal</td>
<td>Vocal</td>
<td></td>
</tr>
<tr>
<td>Helping</td>
<td>Unresponsive</td>
<td></td>
</tr>
<tr>
<td>Facial</td>
<td>Facial</td>
<td></td>
</tr>
<tr>
<td>Action</td>
<td>Action</td>
<td></td>
</tr>
<tr>
<td>Vocal</td>
<td>Vocal</td>
<td></td>
</tr>
<tr>
<td>Receptive</td>
<td>Disapproval</td>
<td></td>
</tr>
<tr>
<td>Facial</td>
<td>Facial</td>
<td></td>
</tr>
<tr>
<td>Action</td>
<td>Action</td>
<td></td>
</tr>
<tr>
<td>Vocal</td>
<td>Vocal</td>
<td></td>
</tr>
</tbody>
</table>

The observers used a direct observation procedure and simply checked the non-verbal behaviors when they observed them. Observer reliabilities were computed by the Pearson product-moment and ranged from .60 to .82.

Summary

Systems to classify non-verbal behavior have not received the attention that verbal behavior has received, due to the fact that the two behaviors are very difficult to separate in direct observation procedures and, in the coding of typescripts or audio tapes, there are no visual cues available to enable the coder to classify such behaviors.

Summary

The types of observation systems reported in the preceding discussions leads to the conclusion that workable systems for recording selected aspects of teacher behavior
have been in existence for many years. Specific approaches and techniques for the classification of classroom behavior will continue to be developed and modified. A major limitation of most of the instruments developed to date is the failure to include adequate definitions of the terms used within the categories. Psychological climate and classroom interaction have been the dimensions that have received the most attention, and reportedly the most success in measurement.

In recent years dimensions related to the content of instruction and the patterns of ideas in teaching and learning have received increasing interest. The behaviors teachers employ as they teach are beginning to become quantifiable through the use of relatively objective instruments. There seems to be a tendency to focus on both verbal and non-verbal behaviors of teachers and to a limited extent the behaviors of the learners.

Special attention is now being given to the roles, functions, and activities in which teachers reportedly engage. It is apparent that much remains to be done in this area, but a more comprehensive system of classifying teacher behaviors is now possible because of the work of the researchers reported here.
CHAPTER III

RATIONALE OF THE STUDY

The Analysis of Teaching

Teaching is a complicated process which embraces many kinds of behavior and activity. It is far too difficult to state in a single unified theory. The process of teaching can be analyzed in many varying ways. At least four such are suggested by Gage. The first of these was concerned with educational objectives:

. . . teaching can be analyzed according to the types of educational objectives at which it is aimed; examples of major types are cognitive, affective, and psychomotor objectives. Thus teaching processes can be classified according to the domain of the objectives to which they seem primarily relevant. When the teacher uses words to define, describe, or explain a concept, such as "extrapolation," his behavior may be primarily relevant to cognitive objectives. When he offers warmth and encouragement, we may consider him to be acting in ways primarily relevant to the affective domain. When he demonstrates the correct way to write a capital F, his behavior may be primarily relevant to psychomotor objectives. At any given moment, more than one of these domains of objectives may be affected. Thus, it is to distinguish the teacher's influence on cognitive change from his influence on affective change in pupils.59

The second suggested way involves teacher activities:

... teaching can be analyzed according to the types of teacher activities. Teachers engage in explaining activities, guidance activities, order-maintaining activities, housekeeping activities, record-keeping activities, assignment making activities, curriculum planning activities, testing and evaluation activities, and many other kinds of activities.60

Still a third way to analyze teaching utilizes the "mirror image" concept:

... stems from the notion that teaching can be viewed as the obverse, or "mirror image," of learning and therefore has components corresponding to those of learning. If the learning process can be analyzed into basic elements or components--let us use Neal Miller's "drive," "cue," "response," and "reward" as examples--then teaching can be analyzed similarly. Corresponding components of teaching might be "motivation-producing," "perception-directing," "response-eliciting," and "reinforcement-providing." For some elements of Miller's analysis of learning there are well-established separate domains of theory, such as theories of motivation and perception. ... in any event, it is questionable whether a single theory of teaching should be sought to encompass all these components of the teaching process.61

A fourth way to analyze teaching, not entirely distinct from those previously mentioned, is by means of learning theories:

... this may be illustrated by "conditioning theory," "identification theory," and "cognitive theory." ... Mowrer conceives learning in all forms to be a matter of conditioning with

60 Ibid.
61 Ibid., pp. 275-276.
punishment or rewards consisting of primary or secondary reinforcements associated with independent or response dependent stimulation . . . Bandura emphasizes that learning consists, at least in major part, of the learner's identification with a model, whom the learner imitates. Luchins holds that learning consists of the cognitive restructuring of problematical situations.62

The above mentioned methods of analyzing teaching suggested that no single theory of teaching should be offered that would attempt to account for all activities of teachers.

**General Assumptions Regarding Teaching**

Teaching tends to proceed from a series of assumptions usually not made explicit in the mind of the teacher. The assumptions generally made include those concerning: (1) the cultural expectations of the school and the teacher, (2) the nature of motivating factors in the learner, (3) the types of effective methodology, and (4) the effective evaluative techniques.

Certain assumptions regarding teaching theory and process were posited in the initial task of selecting dimensions of teacher behavior to be analyzed. The following assumptions concerning the utility of a theory for constructing the instrument were made: (1) theory should be such that classroom teachers could quickly make

62Ibid., p. 276.
connections between the theory and the realities of their classroom situations; (2) theory should contain major categories which point to significant ideas about what, how, and why teachers do what they do in teaching; and (3) theory should help explain relationships between the various kinds of behavior observed, and ultimately provide the participant a frame of reference for modifying behavior.

Certain assumptions regarding the teaching process were made: (1) all teacher behavior is goal-directed, whether made explicit by the instructor or not; (2) teacher behavior may be in the service of numerous goals simultaneously or to relatively few, including a variety of goal levels; (3) goals arise out of perceived demands of the environment and personal needs; (4) teacher behavior is characterized by the transmitting of content, using various methods, and materials; (5) teacher behavior may be modified by the feedback from the learners in the interactive situation; (6) teacher behavior tends to produce some type of student terminal behavior, this may be evaluated in terms of the instructor's goals; and (7) teacher goals tend to be arranged in some sort of hierarchy according to the mental and emotionally toned activities that occur.
Proceeding from the aforementioned assumptions, the next concern became that of identifying certain social and cultural considerations undergirding teaching.

**Cultural and Social Considerations Fundamental to Teaching**

Man: The Culture Builder

The uniqueness of man results from his capacity to build cultures. The use of language has enabled man to advance culture to its present state. Other products of man in the building of culture include a series of techniques for group living, the training of young individuals to such life, and a variety of physical artifacts. 63

Culture is created and perpetuated by man. Once a culture is brought into existence, its variations are to be explained not biologically, but culturally by interactions and developments within the culture itself. It is a stream of ideas, beliefs, customs, and material objects. These elements are interrelated, function as a system and are changed by man over time. Human carriers are necessary for the existence and continuation of the culture process. Humans are the carriers of culture, and the instruments through which the cultural processes are expressed. It is obvious that, whatever other purposes culture may serve,

some determinate portion of it must be employed to keep its human carriers alive.  

Another peculiarity of man is the fact that the learning and performance of culture always takes place in a social situation. The conditions of human cultural learning always involve social arrangements such as: (1) small groups in a classroom, and (2) large groups in a lecture hall, etc. On the whole, man does not learn and perform culture under conditions which might be described as "nature in the raw."  

Society

The system of man-to-man relationships produced by the culture-builders is termed society. This system can be composed of any group of people who have lived and worked together long enough to organize and think of themselves as a social unit with well-defined limits. The foundation of every society is its aggregate of individuals, which provides the raw material from which the society may develop. All life in a society is a series of compromises between the needs of the individual and the needs of the group.


66 Linton, op. cit., pp. 91-112.
A necessary condition for the on-going society to survive is the development of a system of institutions. These institutions help man to perpetuate the existing society by focusing on the patterns of behavior that are common in society and the positions in the existing social structures. The primary function of these institutions is to transmit in a formal way a large share of the traditions of the society.  

Institutions

Institutions serve a function somewhat like "blueprints" of the main outlines of expected human relationships within the society. In addition to this, institutions represent values that are felt as binding for the personality, conscience, life goals, and preferred subjective states of various kinds. The continued existence of any particular system of institutions depends in great part upon the extent to which the pattern contains values, actually invested with meaning for the participants. Thus, institutions are "facts of the external world" that the individual must take into account.

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Core Values

Central to any culture and society seems to be the concept of core values. Actually all cultures may be considered to have a solid, well-integrated, and fairly stable core of values consisting of rather thoroughly understood and accepted ideas, habits, and conditioned emotional responses which are shared by the adult members of the society. These core values are slow changing in nature and powerfully regulate ideas with respect to man's relationship to man and his use of material objects. These core values reflect themselves continually in day-to-day activities, and this applies to teaching as much as any other social activity.

Values as experienced by individuals appear to have certain identifiable qualities. They are more than pure sensations, emotions, reflexes, or needs. Values are abstractions drawn from the flux of the individual's immediate experiences. They are affectively charged and represent actual or potential emotional mobilization. Values are the criteria by which goals are chosen and are important not "trivial." They are modes of organizing conduct, in the sense of desirable standards. Empirically considered, values are not an all-or-none matter, but a continuum. Values concern selected goals and are

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69 Linton, op. cit., p. 282.
components in the selection of adequate means to obtain these goals. \footnote{70}{Williams, \textit{op. cit.}, pp. 399-403.}

American Core Values

In describing value systems in the American society, Williams\footnote{71}{Ibid., p. 415.} attempted to organize the American core values into a consistent and integrated value structure. The result is not a neatly unified "ethos," but a system characterized by diversity. The following paragraphs reveal the major value configurations in American culture today.

American culture is marked by a central stress upon "achievement" and "success," especially secular occupational achievement and monetary success. The American society has emphasized the self-made man and competition. The value attached to achievement tends not to comprehend the person as a whole, but only his accomplishments, in terms of the objective results of his activity. Achievement is difficult to index in a complex society of diverse occupations, because of the great differences in abilities and efforts required for success in various fields. The central type of achievement is in business, commerce, and finance. There is a strong tendency to use money as a
symbol of success. "Money comes to be valued not only for itself and the materials it will buy, but as a symbol of success, thereby personal worth." 

The United States has the type of culture that stresses "activity" and "work." Americans find it easy to be happy if they are actively doing something. In this culture, the individual tends to "face outward" to be interested in making things happen in the external world. Directed and disciplined activity in a regular occupation is a particular form of this basic orientation. Work as an end in itself has lost a great deal of its potency. As the social structure has become more differentiated, manual labor has lost its connection with private property. Thus, work as such has been devalued, and the focus has shifted to certain attainments of achievements and success.

The presence of a "moral orientation" in the American culture seems to be established. The central themes of morality in America have had a common base derived from Judaic-Christian ethics. Included in the orientation are the following cultural imperatives: (1) work hard, (2) lead an orderly life, (3) have a name for dealing fairly, and (4) don't spend your wealth in reckless display. It

[72] Ibid., pp. 417-421.
[73] Ibid., p. 421.
[74] Ibid., pp. 421-424.
is asserted from this orientation that the typical American thinks in terms of right or wrong, good or bad, and ethical or unethical. 75

American emphasis upon "efficiency" and "practicality" has consistently impressed outside observers. America epitomizes high regard for efficiency in techniques and it has become a standard for evaluation in this culture. In the culture at large, the practical man is a good man, and one who concentrates upon goals that are attainable in a given situation. Thus, leaving to others the more abstract and long-range problems. Even American philosophy displays a practical and critical cast, and has been in various ways pragmatic, instrumental, and relativistic. 76

"Progress" is not, to Americans, a mere philosophical idea, but a commonplace experience. Throughout history, Americans have insisted that "nothing is impossible," "forward is better than backward," and that the "best is yet to be." The belief in progress involves the acceptance of change, the idea that changes are tending in a different direction, and that the direction is good. Generations of Americans seem to have verified all three of these components of "progress." 77

75 Ibid., pp. 424-426.
76 Ibid., pp. 428-431.
77 Ibid., pp. 431-433.
Much attention is given to the value placed upon the high level of "material comfort" enjoyed by Americans. The fact that material comfort is highly approved and sought after in this culture indicates little about what specific values are involved. The American experience gives support to the hypothesis that in so far as a society is able to attain a high plane of material comfort, it will tend increasingly to emphasize the "hedonistic value," unless checked by internal social danger or outside threat. When the level of material comfort of a culture has been rising over a considerable period of time, it will be reduced only reluctantly even under the stress of a great social emergency.  

"Freedom," "equality," "patriotism," and "democracy" in the American culture present a highly complex value theme. Along with majority rule, representative institutions, and the rejection of monarchical and aristocratic principles under which the society began, democracy has rested upon the implicit belief in natural law and the moral autonomy of the individual. Major themes of the main democratic creed include equality of certain formal rights and opportunities, a faith in the rule of impersonal law, optimistic rationalism, and ethical individualism. As can be seen, the theme of democracy has converged with

78 Ibid., pp. 433-436.
those of equality and freedom, and has been interpreted along with the moralistic optimism of the doctrines of progress. 79

It is commonplace observation that the application of "science" and "secular rational approaches" have transformed the external conditions of American culture. Here is the interest in order, control, and calculability, exhibited by the passion of an engineering civilization. Emphasis upon science in America has reflected the value of the rationalistic-individualistic tradition. Science is disciplined, rational, functional, active, and it requires systematic diligence and honesty. It is congruent with the focus of interest upon pragmatism and efficiency and the tendency to minimize absolutes and ultimates. 80

"External conformity" is to be expected in the American society in which upward social mobility is highly prized and frequently achieved. The emphasis upon external conformity easily develops out of the premise of basic human equality. The very heterogeneity of the American culture tends to produce a stress upon external conformity. This conformity makes it possible to continue the society

79 Ibid., pp. 436-462.
80 Ibid., pp. 454-456.
in spite of the many clashes of interests and basic values.81

The American culture sets a high value upon the development of "individual personality" and is averse to the invasion of individual integrity. To be a person is to be an autonomous and responsible agent, not merely a reflection of external pressures. To maintain a high evaluation of individual personality is a difficult feat, for there are factors inherent in society that continually threaten this value. The reality of the value, individualism, in the culture is observed not only in the manifest ideology, law, and formalized patterns of behavior, but also at the level of implicit assumptions and unconscious practices.82

Williams concludes his presentation of the American value system by stating:

In broadest outline, then, American society is characterized by a basic moral orientation, involving emphases on active, instrumental mastery of the world in accordance with universalistic standards of performance. It is a pluralistic system in which it is not easy to secure unitary commitment to collective goals. It permits a wide range of goals for achievement.83

81 Ibid., pp. 450-454.
82 Ibid., pp. 462-466.
83 Ibid., p. 470.
American Institutions

In connection with these values, the American culture has five basic institutions: (1) family, (2) religion, (3) economic, (4) political, and (5) education, through which the core values are reflected. Of these institutions, the institution of education seems to adequately reflect these values through the teaching process. As an institution guided by educators, the school cannot be expected to represent any seriously rebellious or deviant ideas. In a like manner, the activities and organizational features of the educational institution indicates position expectations and values.  

Institution of Education

The institution of education is expected to present to the youth of a society those practices which are suitable to the culture and the time. Each culture has its own religious, economic, political, and educational system. There is no culture which fails to contain a number of ideas, values, and practices which education is expected to transmit to the youth of the society. In sum, education does not have as its principal object the individual and his interests, but the means by which society can perpetually recreate the conditions of its very existence. Education reinforces in the homogeneity of society, by

^Elkin, op. cit., p. 28.
fixing in advance, in the minds of the youth, the essential similarities that collective life pre-supposes. Education consists of a systematic socialization of the young generation. 85

Roles and Positions in Society

Culture can be regarded as an organization of learned behaviors and the products of behavior which are shared and transmitted. Moreover, persons are members of an aggregate of persons with more or less common goals, known as a society. These societies are structured into positions which have collections of rights and duties clustered about them. These positions are generally designated by a single term, e.g., mother, teacher, etc. The actions of persons organized around these positions comprise the roles. The roles are defined in terms of the actions performed by the person to validate his occupancy of the position. 86

Roles carry with them two general kinds of expectations: (1) rights are role expectations in which the actor of the role anticipates certain performances from the actor


of the reciprocal role, and (2) duties are role expecta-
tions in which the actor of a role anticipates certain
performances directed toward the actor of the reciprocal
role.87

Socialization Process

The American core values are reflected in the
institution of education through schools and their class-
rooms. Here the social positions of teacher and student
are located. Both positions contain a variety of role
behaviors and role expectations which are the necessary
means of accomplishing the socialization process.

Cultural expectations of the student in the learning
process include the achievement of: (1) cognitive acts of
learning information, skills, and frames of reference
associated with empirical knowledge and technological
mastery, and (2) moral or responsible citizenship in the
community such as: (a) respect for parents and teachers,
(b) co-operation, and (c) good work habits.88

Selection of the Dimensions of Teacher Behavior to be
Included in the Instrument

From the investigation of the social and cultural
considerations undergirding teaching, the dimension of

87 Ibid., pp. 226-229.

88 Talcott Parsons, Social Structure and Personality
teacher objectives was selected. It appeared that man's behavior tends to be goal directed and it is apparently directed by both mental and emotional guides. Bloom's taxonomies of the cognitive and the affective domains of educational objectives were selected as the basic framework for this dimension of the instrument. The wide acceptance of the taxonomies and their adaptability to the dimension of teacher objectives provided the focal point of the instrument to be developed. It was found that both domains reflected the values of science and secular rationality and progress. The affective domain also reflects the values of activity-work, moral orientation, democracy, achievement-success, external conformity, and material comfort.

Man, being a culture builder, has or can devise alternate ways of reaching his goals or objectives. From this concept came the idea for the methods dimension. If the teacher desires student outcomes of a mental and emotional nature, then he must have means of obtaining his goals. MacDonald's continuum of classroom strategies provided the basic framework of the methods dimension,


because of its adaptiveness to the dimension of teacher objectives. The methods dimension was found to reflect the values of efficiency, democracy, activity-work, and achievement-success.

To insure the on-going society, man relies upon communication with his fellow men. This idea led to the development of the dimension of teacher expressions. Using Galloway's\textsuperscript{91} categories of non-verbal teacher behavior, identical categories of verbal teacher behavior were added to construct the dimension of teacher expressions. The teacher must communicate to the students if he is to accomplish his desired outcomes. Since man communicates with his whole body and his total behavior, verbal and non-verbal expressions were included in this dimension. Although values as such are not clearly reflected by expressions, this dimension does regulate to some extent the other two dimensions and almost completely controls the classroom climate.

All of Williams' suggested values are reflected by the objectives and methods dimensions of the instrument, with the exception of the value of individual personality. This value could be described as a cultural fiction, since it is widely accepted as a norm, but not typically followed.

\textsuperscript{91}Galloway, \textit{op. cit.}, pp. 13-49.
in conduct. This value and the previously mentioned values are somewhat reflected in the teaching process.

The Teaching Process

To date, attempts to describe the teaching process have concentrated on what is happening during the teaching situation. Although an analysis of the situation is necessary for an understanding of the teaching process, it is a misconception to view teacher's behavior during the classroom activity as representative of the total complex business of teaching. Much of what the teacher does prior to the class, the "preactive stage," is more-or-less the deliberate stage of teaching. At this stage, teaching resembles a highly rational process. In the classroom, the teacher's behavior becomes an "interactive process," where teacher behavior is spontaneous and less rational. This difference between the preactive and interactive stages has to do with the rapidity of events in the classroom. Amid all of the rapid interchange, the teacher has little time to think.92

The dimensions of behavior selected in this study offer the potential that would enable teachers to analyze the "preactive stage" of their behavior and compare it with the "interactive stage," by means of video recordings of

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their classroom behavior. By analyzing their classroom behavior and reflecting on alternate approaches to teaching specific lessons, this could possibly lead the teacher to higher level objectives. In utilizing objectives, methods, and expressions that would maximize the potential for stressing more cultural values in approved ways, teaching could become more effective. Thus, teachers could become more efficient at carrying out the socialization process in the classroom.

Summary

Culture is produced and perpetuated by man through a system of social relationships based on certain basic values. By establishing a system of institutions and a means of communication to reflect these values to society's young members, the on-going society is assured. A major part of this socialization process is done through the institution of education.

Within the institution of education, certain social expectations become well established. These expectations are rather well-defined in terms of social positions and certain established roles. Thus, the classroom becomes a prime setting for reflecting the approved cultural values in a socially accepted manner.

Throughout this process, there tends to be behaviors of an emotional and mental nature, that
perpetuates the society. These behaviors are intertwined in such a manner, that it is very difficult to identify them separately.
CHAPTER IV

PRESENTATION OF THE INSTRUMENT

This instrument was primarily designed to be used by teachers, who wish to analyze their teaching behaviors, which have been recorded on video tape.

The intent of the instrument developer was to provide teachers with an analytic tool, to be used by them in analyzing video-taped records of their classroom behavior.

The teacher, in using this instrument, should be aware of the special focus placed upon teacher desired outcomes.

The code includes the general dimensions of teacher objectives, methods, and expressions.

Teacher Objectives

The first major area of the self-appraisal instrument is that of Teacher Objectives.

Teacher Objectives are defined as: Teacher statements of anticipated changes in student behavior as a result of selected classroom experiences.

The anticipated changes in student behavior are in the areas of: (1) thinking, (2) feeling, and (3) acting. The choice and arrangement of objectives are assumed to be
based upon some learning theory selected by the teacher. Furthermore, the personal educational philosophy of the teacher is importantly involved.

Teacher objectives in this instrument are divided into two categories, the **Cognitive Domain** and the **Affective Domain**. These domains each have a series of sub-categories.

**Cognitive Domain**

Objectives or desired outcomes call for varying degrees of *intellectual activity* on the part of the students in this domain. This activity ranges from simple acts of remembering information through acts of *increasing complexity* such as applying ideas to new situations, analyzing the elements of an idea, synthesizing the elements of an idea in unique ways, and evaluating ideas.

When teachers are in the process of teaching and testing students, it is usual for them to concentrate on objectives in the cognitive domain. Sub-categories of the cognitive domain follow:

**Knowledge.** Includes the *recall* of specific items of information, ways of organizing, categorizing, studying, judging, and criticizing facts, events, or ideas.

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Bloom (ed.), *loc. cit.*
Examples

Knowledge . . . specific facts. Teacher's intended outcome: Students should be able to state the exact year that Columbus discovered America . . . when asked, "When did Columbus discover America?"

Knowledge . . . trends. Teacher's intended outcome: Students should be able to recall and briefly describe the era of exploration in 15th century Spain . . . when asked, "What were Spaniards of the 1400's doing which made a big difference in history?"

Knowledge . . . methodology. Teacher's intended outcome: Students should be able to recall and briefly describe the method which Columbus used to demonstrate that the world was round . . . when asked, "How did Columbus prove the world was round?"

Comprehension. Includes objectives that indicate that a student can use an abstraction. Emphasis is on the grasp of the meaning and the content of the material. Three types of comprehension behavior appear to be involved: (1) translation, which has to do with an individual putting a communication into other terms; (2) interpretation, which has to do with a configuration of ideas, where the student reorders the ideas into a new configuration; and (3) extrapolation, which has to do with the making of estimates and predictions from known information.
Examples

Comprehension . . . translation. Teacher's intended outcome: Students should be able to state the fact that Columbus was a navigator and explorer, using different words . . . when asked, "We know that Columbus was a sailor and an explorer. How else could you describe him?"

Comprehension . . . interpretation. Teacher's intended outcome: Students should be able to understand and explain what Columbus had in mind when he stated he could travel west to reach the East . . . when asked, "What did Columbus mean when he claimed he could reach the East by traveling west?"

Comprehension . . . extrapolation. Teacher's intended outcome: Students should be able to state a conclusion regarding the most direct route from Spain to the West Indies when provided a world map . . . when asked, "What appears to be the most direct route from Spain to the West Indies?"

Application. Includes remembering and bringing to bear upon new materials appropriate facts, principles, and generalizations. The emphasis is on new situations or on already familiar situations with new elements. The problem must be: (1) posed in a situation which is fictional, (2) drawn from material with which the student is not as yet familiar, or (3) drawn from a familiar situation where new elements have been introduced.
Example

Application . . . Teacher's intended outcome is that the students should be able to determine that Columbus might have sailed a great circle route, if he were taking the most direct course from Spain to the West Indies. The student for the first time will be provided a globe and a piece of string . . . when asked, "How could you describe the route that Columbus sailed if he were to take the most direct route from Spain to the West Indies?"

Analysis. Includes objectives that deal with both content and form. Emphasis is placed on the breakdown of the material into its constituent parts. Additionally, there is a concern for detecting relationships among the parts.

Example

Analysis . . . Teacher's intended outcome is that the students be able to distinguish and state the factors of time, place and transportation facilities which made it possible for Columbus to succeed in his explorations . . . when asked, "What conditions during the time of Columbus made it possible for him to explore and discover?"

Synthesis. Includes the drawing together of elements from many sources and forming them into a
distinctly new pattern. Emphasis is placed on creating a new configuration from familiar elements which have new relationships to each other. This is the category in the cognitive domain that most clearly provides for creative behavior on the part of the learner. The motivational possibilities at this level are unlimited.

Example

Synthesis . . . Teacher's intended outcome:
Students should be able to write a story about Columbus' trip when he discovered America. The student will be instructed to imagine himself as a crew member and will write about his shipboard experiences . . . when instructed, "Imagine you are one of the crew on board the Pinta, sailing with Columbus on his voyage of discovery to the New World. Write a story of the experiences you had during the voyage."

Evaluation. Includes the making of judgments about the value, for some purpose of works, ideas, solutions, methods, or materials. Emphasis is placed on the use of criteria as well as standards for appraising the extent to which information is accurate, effective, economical, or satisfying. Evaluation represents not only an end process in dealing with cognitive objectives, but also a major link with the affective objectives where values, liking, and enjoying are the central processes involved. Although
evaluation is placed at the top of the cognitive domain, it is important to note that it is also involved at lower levels.

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**Example**

Evaluation . . . Teacher's intended outcome:
Students should be able to compare in writing the present state of knowledge available to Columbus prior to his explorations . . . when instructed, "Write a paper in which you tell Columbus knew in his day about the world; then tell what we know about our world today."

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Affective Domain

Objectives or desired outcomes which call for varying degrees of feeling, emotion, or acceptance, rejection, on the part of students. This activity ranges from simple acts of paying attention to various stimuli through acts of increasing complexity such as reacting to stimuli and attaching values to the stimuli.

It is extremely difficult to describe the behaviors appropriate to these objectives. They have as much to do with inward feelings, which cannot be observed, as they do with observable behavior.

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\(^{94}\)Bloom et al., loc. cit.
When teachers are in the process of teaching and testing students, it is usual for them to concentrate less on the affective than on the cognitive objectives.

Receiving. Includes objectives which assume that the learner will merely be conscious or aware of something. Emphasis is placed on the fact that the learner will take into account an object, a situation, or a state of affairs.

**Example**

Receiving . . . Teacher's intended outcome:
Students should be aware that Columbus was one of a number of 15th century West European explorers . . . when informed, "Columbus was only one of many European sailors who ventured into unknown waters seeking fortunes during the 15th century."

Responding. Includes objectives in which the student becomes somewhat active in "doing something with or about" the information or ideas available. Emphasis is placed on the student's acceptance of responsibility for initiating action. This category best describes "interest" objectives and behaviors.
Example

Responding . . . Teacher's intended outcome:
Students will respond by initiating some action which will enable them to gain additional information about Columbus . . . when teacher speculates, "What else do we know about Columbus?"

Valuing. Includes objectives which are sufficiently consistent and stable to have taken on the characteristics of a belief or an attitude. Emphasis is placed on behavior where valuing is motivated, not by desire to comply or obey, but by the individual's commitment to the underlying value guiding the behavior. Three levels of valuing appear to be involved: (1) acceptance of a value, which is concerned with the assigning of worth to some object or behavior; (2) preference for a value, in which the individual actively seeks out or desires the value; or (3) commitment, in which there is a real motivation to act out the behavior. A person at this level tries to convince others and seeks converts to his cause. Belief at this level involves a high degree of certainty.
Teacher Methods

The second major area of the self-appraisal instrument is that of Teacher Methods. 95

Teacher Methods are defined as: the procedures followed or the pattern of acts, utilized by the teacher, that are designed to facilitate the attainment of certain objectives or desired outcomes.

The approaches to the selection of appropriate methods are, to an important extent, suggested by the teacher's choice of objectives or desired outcomes. This then should involve a learning theory selected by the teacher, as well as a personal educational philosophy.

Teacher methods in this instrument are divided into two categories, the Closed Methods and the Open Methods. These categories each have a series of sub-categories.

Closed Teaching Methods

These methods reflect low-level cognitive and affective objectives. Emphasis tends to be upon the most efficient ways of exposing students to existing knowledge. Objectives leading to this type of teaching are restricted in focus. The methods in closed teaching move from teacher-centered activities of imparting knowledge through drills and practice to the more student-centered activity of problem solving.

Information giving. The teacher has information which he forms and manages to send to the student receiver. The students are expected to take this information without distorting it and be able to reproduce the information presented in whatever form the teacher calls for.

--- Examples ---

Information giving . . . lecture, demonstration, review-recall, question-answer.

Mastery. The teacher again provides information; however, the special context of drill and practice provide variation. The objectives are directed to the formation of habits rather than just knowing. Many skills fall in this category, and the basic intent is to make them so automatic
that cognitive awareness of them is no longer necessary for behavior.

Examples

Mastery . . . drill, practice.

Problem solving. The teacher attempts to develop a situation in which the students contact or evolve a problem. The instructor often knows the answer or an answer to this problem, but if not, he has knowledge of how to solve it or faith that it can be solved. The student is expected to take some initiative to think about what he is doing. The teacher expects that the students will see or define a problem and proceed to systematically and thoughtfully solve it. Throughout the process only one answer is sought.

Open Teaching Methods

These methods reflect higher levels of cognitive and affective objectives. Emphasis is upon personal involvement and perspectives. Content is employed to assist students to develop new insights where efficiency is no longer stressed. Interpersonal relationships play an important role in these methods. The methods in open teaching move from individual student involvement in
problem solving where emphasis is placed on the process rather than results, through discussions with fellow students regarding problems at a relatively high cognitive and affective level, reflecting objectives in analyzing, synthesizing, and valuing.

**Clarification.** The teacher attempts to elicit personal responses, reactions, and meanings to life and subject matter. Students are expected to express attitudes, feelings, aspirations, values, and impressions, and to reflect upon them. Questions with pre-determined answers, and teacher judgment of student response are taboo in this sub-category.

**Inquiry.** The teacher emphasizes the process of solving a problem rather than seeking a solution. The teacher should provide circumstances for the students that would encourage them to search, manipulate, experiment, and actively seek ways of solving problems.

**Dialogue.** The teacher emphasizes exploration beyond present awareness for insights, and implications about the material which produces an aesthetic response or an insight. No contributions are rejected, criticized, or judged per se. The roles of all present are the same.

**Teacher Expressions**

The third major area of the self-appraisal instrument is that of Teacher Expressions.
**Teacher Expressions** are defined as: the transmitting of thought or feeling from one person to another through gesture, posture, facial expression, tone and quality of voice as well as by speech.

Expressions are **momentary** communications of verbal and non-verbal messages. Their significance lies in the potential they have for determining the course of interpersonal relations between the teacher and students. Non-verbal expressions may reinforce verbal expressions in setting the tone of interpersonal relations, or they may contradict what appears to be the intent of the verbal expressions.

In choosing expressions, the teacher needs to be aware of the fact that man communicates to his fellow man with his entire body and with all his behavior. This suggests that a teacher can use both verbal and non-verbal expressions to gain maximum impact from his communications. On the other hand, the teacher needs to be aware that a carefully chosen verbal expression can be contradicted by an inappropriate non-verbal expression.

Teacher expressions in this instrument are divided into two categories, the **Verbal Expressions** and the **Non-Verbal Expressions**. These categories each have a series of sub-categories.
Verbal Expressions

Expressions or messages which can be viewed as "teacher talk." Emphasis is on oral communication from teacher to students; the conscious intent is to elicit some response from the students. The sub-categories of verbal expressions are polar in nature, i.e., they range from positive verbal expressions or teacher encouragement, through routine or neutral verbal expressions, to negative verbal expressions or teacher discouragement.

Encouraging verbal expressions. All teacher words of praise, recognition, and commendation are included in this category.

Examples

Encouraging Verbal Expressions . . .
"That's fine, Johnny."
"That was a very good lesson, class."

Routine verbal expressions. All teacher words that convey neither encouraging or inhibiting communicative significance in the context of the situation are included in this category.
Examples
Routine Verbal Expressions . . .
"How many people are eating in the cafeteria today?"
"Turn to page 63 in your books."

Inhibiting verbal expressions. All teacher words of reprimand, admonishment, threat, and accusation are included in this category.

Examples
Inhibiting Verbal Expressions . . .
Admonish - Suggests to a child before he can act. "Walk quietly down the hall."
Reprimand - A direct request to change behavior. "Stop talking, Jim."
Accusation - Inferred guilt. "You aren't listening."
Threat - A direct statement of threat. "If you don't stop talking, you'll stay after school."

Non-Verbal Expressions
Expressions or messages which can be viewed as the teacher's "silent language." Emphasis is on the inaudible communication from teacher to students. More often than

96Galloway, loc. cit.
not there is no conscious intent, i.e., the teacher tends to be unaware of the communications he is generating by his facial expressions, posture, gestures, and tone of voice.

Encouraging non-verbal expressions. All teacher non-verbal expressions that exhibit and imply support, approval, interest, or encouragement to students are included in this category.

Examples

Encouraging Non-Verbal Expressions . . . A smile or facial expression that connotes satisfaction with student's response or behavior. A stance that suggests willingness to have students talk. A pat on the back that endorses approval of the student.

Routine non-verbal expressions. All teacher communicative acts that are a matter of form, or for the sake of form. The nature of the act, whether it is a facial expression, gesture, or vocal tone, conveys little or no encouraging or inhibiting communicative significance in the situation.

Example

Routine Non-Verbal Expressions . . . Teacher flips through the pages of a book while talking to the class.
Inhibiting non-verbal expressions. All teacher non-verbal expressions that openly ignore or show strong disapproval of a pupil's behavior are included in this category.

Examples

Inhibiting Non-Verbal Expressions . . . Facial expressions of frowning, scowling or threatening glances. A hand gesture that suggests the teacher is blocking pupil talk. A stance that suggests boredom or disinterest. A pointed finger that threatens, belittles or pokes fun at a pupil. Any cross vocal tone.

Silence or confusion. All pauses, short periods of confusion in which communication cannot be understood by the coder.
## Instrument for Teacher Self-Appraisal

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CHAPTER V

RESEARCH METHOD AND PROCEDURES

The purpose of this study was to develop a systematic observation procedure for the coding of teacher verbal and non-verbal classroom behavior. This task required three specific phases:

1. Survey the existing instruments in the field of education for the observation of teacher classroom behavior.
2. Select the most nearly adequate instrument for modification and use in the coding of video-tape recordings of teacher classroom behavior.
3. Conduct a pilot study to establish the adequacy and reliability of the instrument.

Phase I involved a thorough search of the related literature to identify, study, and abstract efforts of previous attempts to develop observation procedures for the coding of teacher classroom behavior. Planning sessions composed of people from the fields of education, psychology, sociology, and philosophy were held in order to uncover new and different ideas and concepts related to the observation of classroom behavior. Phase II involved the: (1) integration, (2) synthesis, (3) modification, and (4)
translation of the relevant portions of the work of other investigators into an instrument to serve local purposes. Phase III was designed to test the adequacy and reliability of the instrument and to modify it as the inadequacies became apparent.

The procedures for implementation of these phases are explained in detail in the following report.

**Phase I**

This part of the investigation was directed specifically toward a thorough review of related research that has attempted to develop systematic procedures for the coding of teacher classroom behavior. At the same time several planning sessions were held with members of the Tucson Public Schools, and professors from the University of Arizona in the related fields of behavioral science. From these sessions emerged insights and ideas about systematically observing teacher classroom behavior. In addition, these sessions provided direction for the construction of a rationale for the instrument. The analysis of the related research and the planning sessions provided a basis for the activities of Phase II.

**Phase II**

Phase II involved the: (1) integration, (2) synthesis, and (3) translation of the relevant portions of
the work of other researchers into a systematic observation schedule for the coding of teacher verbal and non-verbal classroom behavior. This task was accomplished by: (1) modifying an existing instrument for the coding of teacher non-verbal classroom behavior to include teacher verbal classroom behavior, and (2) developing logically related categories in the dimensions of teacher objectives, teacher methods, and teacher expressions.

The devised instrument focused on three dimensions of teacher behavior: (1) objectives, (2) methods, and (3) expressions. Each dimension contained two categories: (1) cognitive and affective, (2) open and closed, and (3) verbal and non-verbal. Twenty-one sub-categories were distributed among the six major categories.

The categories and sub-categories were checked by the Teacher Self-Appraisal research team through the viewing of video-tape recordings of teacher classroom behavior. Deletions and additions of categories were made as necessary. The observations provided evidence that some teacher behaviors were difficult or impossible to categorize. Thus categories and sub-categories were re-defined in order to provide more appropriate cues, for the coders to record the behavior they were observing. References to other coding procedures were made to determine observation procedures and length of observation intervals.
An IBM Packet\(^{97}\) was designed (Appendix A) to include: (1) a lead card of pertinent information concerning the teacher being observed, and (2) a card for each observation interval to be used by the coder in recording the observed teacher classroom behavior. The purpose of the IBM packet was to: (1) enable the computation of coder agreement to be compiled daily by the electronic computer (Appendix B), and (2) increase the efficiency of the analysis of the recorded behavior. It was decided that coder agreement would be computed by dividing the number of coder agreements by the total number of coder observations.

Reactions and suggestions were considered by the Teacher Self Appraisal research staff. As a result of these encounters, operational definitions and video-tape referents were organized for the third phase.

**Phase III**

Phase III was designed to empirically test the adequacy and the reliability of the devised instrument. This phase was divided into three major activities: (1) an initial tryout with teachers and administrators from Orange, California, (2) the conducting of a pilot study, to train students in the College of Education, University

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\(^{97}\)Elinor Markert, Research Department Programmer, Tucson Public Schools District #1, Tucson, Arizona, 1967.
of Arizona, and (3) the coding of video-tape recordings by trained observers, for the Teacher Self Appraisal Research Project.

Initial Tryout

The initial tryout included: (1) introducing the instrument and its purpose, (2) a brief training session, (3) explaining the observation procedures and techniques (Appendix C), and (4) checking the recorded observations of a 10 minute video recording of classroom behavior for coder agreement.

Following the development of the instrument, a meeting was held with teachers and administrators of the Orange Unified School District in Orange, California to acquaint them with the instrument, its purpose and the observation techniques.

Forty teachers and administrators attended the three hour session. The group was divided into twenty teams of two independent coders each. After a period of introduction and explanation of the instrument and instruction of its use, the twenty teams were asked to use the IBM packets to record teacher classroom behavior from a 10 minute social studies videotape, at 30 second intervals. The table below is a sample of coder agreement computed from this initial tryout.
An analysis of coder agreements and disagreements indicated needed changes in some of the observation procedures and more specifically the category definitions. With this initial experience, the team then undertook the proposed pilot study.

Pilot Study

Six students, five graduate and one undergraduate, from the College of Education, University of Arizona, were employed and given five two hour training sessions with the instrument. During the training sessions, 10, 15, and 30 second intervals of observation were tried in order to determine the most suitable and feasible intervals for sampling teacher classroom behavior. The 10 second interval was selected by the trainees as the most suitable...
interval for recording teacher classroom behavior from video-tape recordings.

After six hours of training, the coders were divided into three teams and instructed (see Appendix D) to code four, fifteen minute volunteer video recordings of teacher classroom behavior to check for agreement within teams and among teams. These check periods occurred on four different days, and each period was followed by a briefing session to inform the coders of their agreements and disagreements. The following tables report the coder agreements.

**Tape #1**

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The results of the Check Tape #4 was deemed satisfactory. The pilot study trainees and the instrument were considered adequate to the task of coding the 240 video recordings of teachers involved in the Teacher Self Appraisal Research Project.

Although the Teacher Self-Appraisal Project recordings were not considered a part of the development of this instrument a sample of coder agreement is reported in the following tables.
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Each team coded eighty, twenty minute video recordings of teacher classroom behavior for the Teacher Self-Appraisal Research Project. Ten tapes have been
randomly selected to cross check team agreement. The following agreements were reported on this selected tape:

Pre-Tape #50

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### Non-Verbal Expression

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The three phases described in this chapter resulted in a system of observing teacher classroom behavior which focused on three dimensions of teaching behavior: (1) teacher objectives, (2) teacher methods, and (3) teacher expressions. The reliability of the instrument was evident from the results of the pilot study conducted. In a period of 8 to 10 hours, six coders were trained to record and categorize teacher behavior with a rather high degree of agreement.

The four check tapes had agreements ranging from .51 to .99 over all five categories. Within categories agreements ranged from .40 to 1.00. On the last day of training and check tape number 4, agreements ranged from .85 to 1.00 within teams and from .81 to .93 between teams.

An examination of the sample print-outs (Appendix B) reveals a rather wide spread of items recorded in all
categories except teacher verbal and non-verbal expressions, where approximately 85% of the expressions are recorded as routine.

An analysis of the print-outs led to the conclusions drawn in Chapter VI and imply certain modifications in future research and development of this instrument.
CHAPTER VI

SUMMARY, CONCLUSIONS, AND IMPLICATIONS

Summary

As originally conceived, the instrument developed in this study was to have been the modification of an already existing instrument. It was to be used in categorizing and describing teacher verbal and non-verbal classroom behavior from video-recordings.

Bloom's taxonomies\(^98\) of educational objectives provided one dimension of teacher classroom behavior. Using the hierarchies of the cognitive and affective domains, the teacher objectives dimension was developed. All six levels of the cognitive domain were included in the instrument, while only the receiving, responding, and valuing levels of the affective domain were used. The remaining levels of the affective domain in their present state could not be modified to fit the purposes of the instrument.

MacDonald's\(^99\) concept of teaching strategies provided the basis for the methods dimension. The open and

\(^{98}\) Bloom (ed.), loc. cit.; Bloom et al., loc. cit.

\(^{99}\) MacDonald, loc. cit.
closed methods approach did support the categories devised in the objectives dimension. Thus, two dimensions of teacher behavior, with as little emphasis as possible on observer's values were developed.

Galloway's\textsuperscript{100} instrument for classifying non-verbal behavior was selected to be modified to include both verbal and non-verbal teacher expressions of an encouraging, routine, and inhibiting nature. This existing instrument provided the third dimension of teacher classroom behavior to be analyzed and described.

The rationale presented in Chapter III provided a social-cultural basis for the development of the instrument. The development of the IBM packet and the utilization of the electronic computer added a component of efficiency to the instrument's usefulness. This provided immediate feedback to the coders and analyzers concerning the recorded teacher's behaviors and also provided the teacher an immediate summary of the coded behaviors.

Although the code was designed for teachers' use in recording their teaching behaviors as recorded on videotape, it appears that others can use the instrument as a descriptive device in the recording of teacher verbal and non-verbal classroom behavior. The code does provide a means of describing certain facets of teacher behavior in

\textsuperscript{100}Galloway, \textit{loc. cit.}
terms of objectives, methods, and expressions. The categories of the code provide a logical framework of reference by means of which teacher behaviors could be viewed. The testing and use of the instrument to date has produced the following conclusions.

### Conclusions

The following statements enumerate the conclusions of this study.

1. Observational procedures for systematically classifying and describing teacher verbal and non-verbal classroom behavior simultaneously have not been readily available.

2. This attempt to develop an instrument for the coding of teacher verbal and non-verbal classroom behavior was exploratory in nature, and all three dimensions need further experimentation, modification, and elaboration.

3. Teacher's objectives, methods, and expressions can be identified from video recordings by trained coders in a reliable fashion.

4. From comparing the training results of the Orange County teachers and the trainees of the Pilot Study, the following training suggestions are made: (1) train only 6 to 10 coders at a time, (2) work for no longer than 2 hours per session,
(3) schedule only 1 training session per day, and
(4) allow 8 to 10 hours of instruction for acceptable coder agreement to be obtained.

5. In the Pilot Study, the dimension of teacher expressions received between 80 and 90 per cent of the behaviors recorded as routine. This implies that this dimension does not provide category definitions for the coder to discriminate and identify the various verbal and non-verbal teacher expressions.

6. The electronic computer can be utilized to provide immediate coder agreements, disagreements, and statistical analysis of the recorded behaviors, thus freeing personnel from a gigantic task, requiring many man hours.

**Implications for Future Research**

The advent of inexpensive video equipment and video recordings make it possible for teachers to document and observe their classroom behavior, thus providing opportunities for self-analysis. In-service training programs to improve teaching could be developed using the concept of teacher self-appraisal, utilizing video equipment and emphasizing teacher objectives, methods, and expressions as a logical approach to the improvement of teaching.
The dimensions of objectives and methods focus mainly on the task of improving teaching through both a cognitive and affective approach. The dimension of expression provides a means for describing and analyzing classroom climate and affective teacher behavior in terms of teacher communication.

The instrument developed in this study and the video equipment utilized, now provides the opportunity to compare a person's self perceptions to how others perceive him. This appears to offer an innovative approach to bring about change in teaching.
APPENDIX A

IBM PACKET LEAD CARD AND OBSERVATIONAL INTERVAL CARD
This lead card contains the following information concerning the teacher: (1) name of school, (2) grade level, (3) subject, (4) age, (5) highest degree attained, (7) number of years teaching experience, (8) sex, (9) experimental group assignment, (10) date of tape, (11) coder identification, and (12) date tape was coded.
Each IBM packet contains 110 of these cards, each card is individually numbered to correspond with the interval of observation. Coders are instructed to shade a block in each of the categories: (1) cognitive, (2) affective, (3) method, (4) verbal, and (5) non-verbal.
# APPENDIX B

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**Disagreements:**
- 7
- 1
- 3
- 5
- 15

**Reliabilities:**
- 0.94
- 0.99
- 0.97
- 0.95
- 0.86

*Total: 0.94*
APPENDIX C

INITIAL TRYOUT INSTRUCTIONS TO CODERS

The Orange, California teachers and administrators were divided into teams of two independent coders each. Each team was given an IBM packet containing an identification lead card for each coder, and twenty IBM code cards, one for each 30 second interval of observation, noted by a beep on the video tape recording.

Each coder was instructed not to talk during the coding session, but playbacks of intervals could be requested. At each 30 second beep, each coder was instructed to check one item in each of the five categories of the instrument. An IBM pencil was furnished for marking the IBM card.

At the end of each 30 second interval, the video-recorder was stopped for 15 seconds to allow the coders to record their observations. Each code card was numbered to correspond with the interval beep, thus rechecks of certain observation intervals was possible. After the coder had recorded his observations in each of the five categories, he simply turned the card upward from the packet and the next code card was available.
After the recording was completed the coders were instructed to reassemble their packet in the order they received it. The packets were then ready to be machine punched and scored.
APPENDIX D

INSTRUCTIONS TO PILOT CODERS

Each of the six trainees were instructed in the operation of the Ampex Video Recorder, models 6000 and 7100. The instructions included the following operations: (1) loading the tape, (2) starting the recorder, (3) stopping the recorder, (4) playback, (5) fast forward, (6) rewind, and (7) clearing the recorder. After the training period, each trainee was checked on the procedures for correctly loading, operating, and clearing the recorder.

The IBM packets used by the trainees contained an identification card for each coder and 110 coding cards individually marked to correspond with each 10 second interval observed and recorded. Each trainee was instructed to: (1) mark the card correctly for machine scoring, (2) mark one item in each of the five categories at each 10 second interval, (3) arrange the cards correctly in the packet after coding had been completed, and (4) reassemble the packet for machine scoring.

After six sessions, two hours each, the coders were divided into three teams and given four check tapes to code: (1) two 15 minute social studies tapes, (2) one 15 minute arithmetic tape, and (3) one 15 minute reading
tape. These tapes were intermediate teacher classroom recordings.

The coders were instructed to view the complete tape and discuss at various intervals, the dimensions of teacher behavior observed in terms of teacher objectives, methods, and expressions. Replay the tape, coding at 10 second intervals without talking or comparing the behavior observed. Thus, the time required to code a 15 or 20 minute video tape recording of teacher classroom behavior takes approximately 50 to 60 minutes. At each 10 second beep, the machine is stopped for 10 seconds to allow the coders to mark their code cards, or replay the interval. The team agreements and among team agreements are reported in Chapter V.


Medley, Donald, Joseph Impellitteri, and Lou Smith. "Coding Teachers' Verbal Behavior in the Classroom: A Manuel for the Users of OScAR 4V." Hunder College of the City University of New York, 1967. (Mimeographed.)


