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The Reciprocal Category System (RCS) is an observational system used to record and assess teacher-student classroom verbal interaction. The RCS is composed of nine verbal categories which are applicable to either the student or teacher (and as such are numbered differently, thus producing 18 categories) and one additional category--silence or confusion. The observer records the classroom verbal behavior not less than every three seconds by placing the number assigned to any of the 19 categories (such as number 1 for "'warms' the climate" or number 5 for "responds") on a tally sheet. The columns of raw data on the sheet are then bracketed into pairs and plotted on a 19 by 19 matrix for a visual representation of behavior patterns and the frequency of their occurrence. The matrix is also used to determine percentage relationships among patterns, flexibility of classroom behavior, and the occurrence of behaviors in any of the four submatrices--teacher-teacher, teacher-student, student-teacher, and student-student talk. As a research tool, the RCS permits the conceptualization and measurement of many verbal behaviors; as a training tool which sensitizes teachers to subtle and uncommon verbal behaviors, it aids in producing teachers who are able to control or plan verbal behavior and who can use the RCS for feedback in their own classrooms. (A five-item bibliography and self-practice tests are included.) (LP)

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THE RECIPROCAL CATEGORY SYSTEM

RCS

AN OBSERVATIONAL SYSTEM DESIGNED TO ASSESS TEACHER-STUDENT CLASSROOM VERBAL INTERACTION.

RICHARD L. OBER

SP002827

Price $2.50

THE RECIPROCAL CATEGORY SYSTEM -- RCS

An Observational System Designed to
Assess Teacher-Student Classroom
Verbal Behavior

A WORKING MANUAL

Copies may be secured from Richard L. Ober, College of Education, University of South Florida, Tampa, Florida ($2.50)

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Preface

This is a working manual designed for use in training observers in the Reciprocal Category System (RCS). The RCS is an observational system that has been developed for the purpose of assessing the broad spectrum of teacher-student verbal behavior within the teaching-learning situation. As such, the RCS is a useful instrument to both the researcher and the teacher trainer.

The manual consists of an Introduction and three separate parts: The Introduction discusses the concept of systematic observation in general. Part I explains the basic rationale and construct of the RCS. Part II describes the mechanics of the RCS and Part III discusses how the RCS can be utilized as a research and teaching tool.

At appropriate points throughout the manual there are included Self Practice Tests. These are designed for immediate student use and the test sheets are perforated in order that they can be removed from the manual if necessary.* At the back of the manual (in the Appendix), there are included four different plotted matrices (Situation 1, 2, 3, and 4) which will be helpful in matrix interpretation excercises along with several blank 19 x 19 matrices that will be useful for collecting RCS data.

In conclusion, it should be made clear that although this is a working manual and, as such, is 'semi-programmed," it is probably designed to be most useful when employed in group training sessions conducted by a trained instructor as opposed to a self-instruction situation. For further information concerning other instructional materials related to the RCS and techniques to be used in training, please contact the author.

R. L. O.

* Answer sheets for the Self Practice Tests are not included in the manual. They can be secured from the author (by instructors only) upon written request accompanied with a self addressed stamped envelope.

Basic-Minimal Objectives for Learning to Use the Reciprocal Category System -- RCS.

As a result of his training in using the RCS, the trainee should become adquainted with and gain an operational understanding of the instrument and its mechanics. To be considered a competent and reliable observer, he should be able to:

1. Associate the correct category number with each of the 19 category description of the RCS.

2. Record RCS category numbers at the rate of approximately 20 tallies per minute (a minimum of one every three seconds).

3. Collect data (either "live" from a teaching-learning situation or from a tape recording) recording the correct RCS category numbers at the rate of 20 tallies per minute with a minimum acceptable reliability of 0.60.

4. Name correctly by row and column numbers each of the 361 cells that comprise a 19 x 19 RCS matrix.

5. Plot five 20-tally columns of raw RCS data in a blank 19 x 19 matrix with no greater than five per cent error.

6. Interpret the cell loadings of RCS data plotted in a 19 x 19 matrix with no greater than five per cent error.

7. Make appropriate judgments concerning a teaching performance from RCS data plotted in a 19 x 19 matrix.

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INTRODUCTION

For the purposes of this manual, the term "observational system" is defined as any technique designed for the purposes of identifying, examining, classifying, and/or quantifying specific variables that can be typically observed in a teaching - learning situation. At the present time, considerable attention is being devoted to the creation, development, and use of observational systems as a means for investigating more precisely and objectively the nature of the classroom. Several of the more common observational systems currently in use are the OScAR (5), the Teacher Practices Observational Record (2), the Gallagher-Aschner technique (4), the Florida Taxonomy of Cognitive Behavior (3), and the Flanders System of interaction analysis (1).

Basically there are two different types of constructs from which to choose when building an observational system -- the "sign" construct and the "category" construct. A "sign" system consists of a fixed number of descriptive items which are not mutually exclusive. That is, each and every live observation may not be included in the list of item descriptions and, therefore, each observation need not necessarily be checked on the list of available descriptive items. Operationally, when the observer is using a sign system he normally observes the ongoing classroom activities for a predetermined period of time (usually between two and ten minutes). He then immediately runs down through the list of item descriptions and marks those which he has just observed. It conceivably could be that he will check all, none, or some of the items depending on what he has just observed. He then returns to making observations, followed by marking, etc. until he has completed the period of observation (normally 20-30 minutes).

Three examples of common sign systems are the OScAR (4), the Teacher Practices Observation Record (2), and the Florida Taxonomy of Cognitive Behavior (3). Of course others are available, however these three suffice to demonstrate the point and are readily available for easy utilization.

For more specific demonstrative purposes, the construct of the Teacher Practices Observation Record -- a sign system -- is shown in Fig. 1 on pages 3 - 5. You will note that the descriptive list consists of 62 items paired-off such that one item reflects the opposite of another. The observer is directed to observe the classroom activities for five minutes after which he runs down through the 62 items, checking those which he observed. He then observes for another five minute period, checks, observes, checks, etc. After completing the observations, he calculates a composite score for the observations that were just made.*

A "category" system, on the other hand, is comprised of a fixed number of mutually exclusive categories such that each individual observation must arbitrarily be assigned that single category description number which best describes it. This implies that the observer must make a critical judgment right at the time of observation with respect to which category description number will be assigned to a given observation. When an observer uses a category system, he observes, determines which category best fits it, and records it immediately. He continues this observe, assign, and record pattern over and over until he has completed the observation period. When the observations are completed, the recorded raw data represent a sequential account of the activities that were observed to have occurred during the given period of time.

The Flanders System of verbal interaction analysis (1) and the Reciprocal Category System are two category systems currently in use today. The Flanders System was one of the first systems that was manageable as a research and training tool. The system consists of ten categories; five assigned to teacher talk, two assigned to student talk, and a single category reserved

* For a more detailed explanation of the Teacher Practices Observation Record see Brown, B.B. The Experimental Mind in Education, New York: Harper and Row, 1968.

Name of Teacher_____ Date_____
(month) (day) (year)

School_____ _____
(city) (state)

Grade_____Subject_____ Name of Observer-judge_____

TEACHER PRACTICES OBSERVATION RECORD

DIRECTIONS

The Teacher Practices Observation Record provides a framework for observing and recording the classroom practices of the teacher. Your role as an observer is to watch and listen for signs of the sixty-two teacher practices listed and to record whether or not they were observed, WITHOUT MAKING JUDGMENTS AS TO THE RELATIVE IMPORTANCE OR RELEVANCE OF THOSE PRACTICES.

There are three (3) separate 10-minute observation and marking periods in each 30-minute visit to the teacher's classroom. These are indicated by the column headings I, II, III. During period I, spend the first 5 minutes observing the behavior of the teacher. In the last 5 minutes go down the list and place a check (✓) mark in Column I beside all practices you saw occur. Leave blank the space beside practices which did not occur or which did not seem to apply to this particular observation period. A practice which occurs a dozen times gets one check mark, the same as an item which occurs only once.

Repeat this process for the second 10-minute period, marking in Column III. Please add the total number of check marks recorded in columns I, II, and III for each teacher practice and record in the column headed TOT. There may be from 0 to 3 total check marks for each item.

Fig. 1 -- A Copy of the Teacher Practices Observation Record (TPOR) -- A Sign System.

TEACHER PRACTICES OBSERVATION RECORD

TEACHER PRACTICES

TOT	I	II	III	
				A. NATURE OF THE SITUATION
				1. T makes self center of attention.
				2. T makes p center of attention.
				3. T makes something itself center of p's attention.
				4. T makes doing something center of p's attention.
				5. T has p spend time waiting, watching, listening.
				6. T has p participate actively.
				7. T remains aloof or detached from p's activities.
				8. T joins or participates in p's activities.
				9. T discourages or prevents p from expressing self freely.
				10. T encourages p to express self freely.
				B. NATURE OF THE PROBLEM
				11. T organizes learning around Q posed by T.
				12. T organizes learning around p's own problem or Q.
				13. T prevents situation which caused p doubt or perplexity.
				14. T involves p in uncertain or incomplete situation.
				15. T steers p away from "hard" Q or problem.
				16. T leads p to Q or problem which "stumps" him.
				17. T emphasizes gentle or petty aspects of topic.
				18. T emphasizes distressing or ugly aspects of topic.
				19. T asks Q that p can answer only if he studied the lesson.
				20. T asks Q that is not readily answerable by study of lesson.
				C. DEVELOPMENT OF IDEAS
				21. T accepts only one answer as being correct.
				22. T asks p to suggest additional or alternative answers.
				23. T expects p to come up with answer T has in mind.
				24. T asks p to judge comparative value of answers or suggestions.
				25. T expects p to "know" rather than to guess answer to Q.
				26. T encourages p to guess or hypothesize about the unknown or untested.
				27. T accepts only answers or suggestions closely related to topic.
				28. T entertains even "wild" or far-fetched suggestion of p.
				29. T lets p "get by" with opinionated or stereotyped answer.
				30. T asks p to support answer or opinion with evidence.

TEACHER PRACTICES OBSERVATION RECORD

TOT	I	II	III		
					D. USE OF SUBJECT MATTER
				31.	T collects and analyzes subject matter for p.
				32.	T has p make his own collection and analysis of subject matter.
				33.	T provides p with detailed facts and information.
				34.	T has p find detailed facts and information on his own.
				35.	T relies heavily on textbook as source of information.
				36.	T makes a wide range of informative material available.
				37.	T accepts and uses inaccurate information.
				38.	T helps p discover and correct factual errors and inaccuracies.
				39.	T permits formation of misconceptions and over-generalizations.
				40.	T questions misconceptions, faulty logic, unwarranted conclusions.
					E. EVALUATION
				41.	T passes judgment on p's behavior or work.
				42.	T withholds judgment on p's behavior or work.
				43.	T stops p from going ahead with plan which T knows will fail.
				44.	T encourages p to put his ideas to a test.
				45.	T immediately reinforces p's answer as "right" or "wrong".
				46.	T has p decide when Q has been answered satisfactorily.
				47.	T asks another p to give answer if one p fails to answer quickly.
				48.	T asks p to evaluate his own work.
				49.	T provides answer to p who seems confused or puzzled.
				50.	T gives p time to sit and think, mull things over.
					F. DIFFERENTIATION
				51.	T has all p working at same task at same time.
				52.	T has different p working at different tasks.
				53.	T holds all p responsible for certain material to be learned.
				54.	T has p work independently on what concerns p.
				55.	T evaluates work of all p by a set standard.
				56.	T evaluates work of different p by different standards.
					G. MOTIVATION, CONTROL
				57.	T motivates p with privileges, prizes, grades.
				58.	T motivates p with intrinsic value of ideas or activity.
				59.	T approaches subject matter in direct, business-like way.
				60.	T imposes external disciplinary control on p.
				61.	T approaches subject matter in indirect, informal way.
				62.	T encourages self-discipline on part of p.

for silence or confusion. Fig. 2 shows a listing of the category descriptions for the Flanders System. For a more detailed discussion of this system refer to "The Role of the Teacher in the Classroom" (1).

The remainder of this manual deals almost entirely with the Reciprocal Category System -- hereafter abbreviated the RCS. The manual is divided into three separate sections. The first section presents the basic rationale and construct of the RCS. The second section explains the mechanics of the system and how data are prepared for study and research purposes. The third and last section deals with how the RCS can be effectively employed as both a research and a training tool.

PART I

BASIC RATIONALE AND CONSTRUCT OF THE RCS.

The RCS is an observational system designed to identify, examine, classify, and quantify the various types of verbal activities that go on in a typical classroom teaching-learning situation. The system consists of nine common categories, each of which can be assigned to either teacher or student talk (refer to Fig. 3 for category descriptions). When verbal behavior is observed as teacher talk its category number is recorded as a single digit number (Categories 1 through 9, along the left hand margin of Fig. 3). In contrast, when verbal behavior is observed as student talk, its category number is recorded as a two digit number (Categories 11 through 19, along the right hand margin of Fig. 3). With the introduction of the reciprocity factor -- allowing each of nine categories to be assigned to either teacher or student talk -- the system is actually expanded to an operational total of 19 categories (two times the nine common categories plus Category 10 for silence or confusion).

In constructing the RCS, the broad and more comprehensive dimension of classroom verbal behavior was separated and considered in terms of four different subdimensions. In the following diagram these subdimensions are

Teacher Talk	Indirect Influence	1. Accepts Feeling: accepts and clarifies the feeling tone of the students in a non-threatening manner. Feelings may be positive or negative. Predicting or recalling feelings are included. 2. Praises or Encourages: praises or encourages student action or behavior. Jokes that release tension, not at the expense of another individual, nodding head or saying "um hm" or "go on" are included. 3. Accepts or Uses Ideas of Student: clarifying, building, or developing ideas or suggestions by a student. As teacher brings more of his ideas into play, shift to category five. 4. Asks Questions: asking a question about content or procedure with the intent that a student answer.
	Direct Influence	5. Lecturing: giving facts or opinions about content or procedure; expressing his own ideas, asking rhetorical questions. 6. Giving Directions: directions, commands, or orders to which a student is expected to comply. 7. Criticizing or Justifying Authority: statements intended to change student behavior from non-acceptable to acceptable pattern; bawling someone out; stating why the teacher is doing; extreme self-reference.
Student Talk		8. Student Talk -- Response: talk by students in response to teacher. Teacher initiates the contact or solicits student statement. 9. Student Talk -- Initiation: talk by students which they initiate. If "calling on" student is only to indicate who may talk next, observer must decide whether student wanted to talk. If he did, use this category.
		10. Silence or Confusion: pauses, short periods of silence and periods of confusion in which communication cannot be understood by the observer.

Fig. 2 -- Summary of Categories for the Flanders System of Interaction Analysis in its Regular Ten-Category Form. (Adapted from Flanders, N. A., Teacher Influence, Pupil Attitudes, and Achievement. Coop. Res. Monogr. No. 12, CE 25040. Washington: W.S. Dept. of H.E.W., 1965.)

Category Number Assigned to Party 1[1]	Description of Verbal Behavior	Category Number Assigned to Party 2[2]
1	"WARMS" (INFORMALIZES) THE CLIMATE: Tends to open up and/or eliminate the tension of the situation; praises or encourages the action, behavior, comments, ideas, and/or contributions of another; jokes that release tension not at the expense of others; accepts and clarifies the feeling tone of another in a friendly manner (feelings may be positive or negative; predicting or recalling the feelings of another are included).	11
2	ACCEPTS: Accepts the action, behavior, comments, ideas, and/or contributions of another; positive reinforcement of these.	12
3	AMPLIFIES THE CONTRIBUTIONS OF ANOTHER: Asks for clarification of, builds on, and/or develops the action, behavior, comments, ideas and/or contributions of another.	13
4	ELICITS: Asks a question or requests information about the content subject, or procedure being considered with the intent that another should answer (respond).	14
5	RESPONDS: Gives direct answer or response to questions or requests for information that are initiated by another; includes answers to ones own questions.	15
6	INITIATES: Presents facts, information, and/or opinion concerning the content, subject, or procedures being considered that are self-initiated; expresses ones own ideas; lectures (includes rhetorical questions -- not intended to be answered).	16
7	DIRECTS: Gives directions, instructions, orders, and/or assignments to which another is expected to comply.	17
8	CORRECTS: Tells another that his answer or behavior is inappropriate or incorrect.	18
9	"COOLS" (FORMALIZES) THE CLIMATE: Makes statements intended to modify the behavior of another from an inappropriate to an appropriate pattern; may tend to create a certain amount of tension (i.e., bawling out someone, exercising authority in order to gain or maintain control of the situation, rejecting or criticizing the opinion or judgement of another).	19
10	SILENCE OR CONSUSION: Pauses, short periods of silence, and periods of confusion in which communication cannot be understood by the observer.	10

[1]Category numbers assigned to Teacher Talk when used in classroom situation.

[2]Category numbers assigned to Student Talk when used in classroom situation.

Fig. 3 -- Summary of Categories for the Reciprocal Category System.

represented on four continua, each reflecting two dualistic qualities:

Category Numbers*	Subdimension	Category Numbers*
1 and 11	Warm-Cool	9 and 19
2 and 12	Accept-Correct	8 and 18
3 and 13	Amplify-Direct	7 and 17
4 and 14	Elicit-Initiate	6 and 16

*Refer to Fig. 3.

NOTE: Collectively, Categories 4, 5, 6, and Categories 14, 15, 16 constitute a "transactional" group of behaviors that deals with the content or subject matter aspects of the verbal interaction. Categories 5 and 15 -- responding -- by definition do not entirely fit in either the elicit or the initiate category. Therefore, Categories 5 and 15 were not placed on the elicit-initiate continuum above, but, because of their relationship, are discussed in greater detail along with the transactional group later on.

THE WARM-COOL SUBDIMENSION

The warm categories -- one and eleven -- and the cool categories -- nine and nineteen -- deal with the socioemotional aspects of the classroom. By formal definition, use of the warm-cool categories tends to have an effect on the feelings and emotions of another person as in contrast, for instance, to the accept-correct categories (two, twelve, eight, and eighteen) which are directed more toward another person's behavior.

Categories 1 and 11: Warming the Climate

> "WARMS" (INFORMALIZES) THE CLIMATE: Tends to open up and/or eliminate the tension of the situation; praises or encourages the action, behavior, comments, ideas, and/or contributions of another; jokes that release tension not at the expense of others; accepts and clarifies the feeling tone of another in a friendly manner (feelings may be positive or negative; predicting or recalling the feelings of another are included).

Teacher or student use of the "warming" category tends to alleviate threat and/or release tension. When classifying warming verbal behavior, the grammatical construct and syntax are not the only considerations to be made. Implicit are the qualities of sincerity and genuineness on the part of the initiator in addition to a degree of appropriateness as it applies to a given

situation. For example, following a voluntary student contribution the teacher might reply "That's very good, Tom!" Considering only the grammatical structure of the reply, it may or may not be correctly recorded as Category 1. If, in fact, Tom's contribution was in order and appropriate to the situation and if it is clear to the observer that the teacher's reply was made with sincerity of purpose, the observer would correctly record the observation as Category 1. In contrast, however, if Tom's contribution was inappropriate to the situation and, as a result, the teacher's comment smacked of ridicule or sarcasm, the observer would correctly record it as Category 9 -- having a "cooling" effect.

Categories 9 and 19: Cooling the Climate

"COOLS" (FORMALIZES) THE CLIMATE: Makes statements intended to modify the behavior of another from an inappropriate to an appropriate pattern; may tend to create a certain amount of tension (i.e., bawling out someone, exercising authority in order to gain or maintain control of the situation, rejecting or criticizing the opinion or judgement of another).

Use of the cooling category tends to produce threat and/or create tension. Verbal behaviors of this sort are usually used for the purposes of regimentation, sarcasm, ridicule, or the alientation of another person from the group. Again, as in classifying the warming category, the qualities of personal sincerity on the part of the initiator and appropriateness to the situation need to be consisered along with grammatical construct.

It should be obvious from the above discussion that assignment of the warm-cool categories should be reserved for situations that obviously involve the feelings and/or emotions of another person -- either positively or negatively. In practice, it turns out that some teachers are characteristically neither warm nor cool -- they are seldom, if ever, observed to use one's or nine's. By the same token, other teachers are typically observed to be predominantly either warm or cool or interchangeable warm and cool. Likewise, students may

commonly be observed to produce characteristic patterns of verbal behaviors with respect to the warm-cool categories.

THE ACCEPT-CORRECT SUBDIMENSION

Use of the accept-correct categories is directed toward the behavior (ideas, comments, opinions, contributions, acts, etc.) of another person. Although they may affect another person's feelings or emotions indirectly, they do not affect them as acutely as the warm-cool categories discussed above.

Categories 2 and 12: Accepting

ACCEPTS: Accepts the action, behavior, comments, ideas, and/or contributions of another, positive reinforcement of these.

The acceptant category reflects a spirit of agreement and is assigned to teacher or student talk that is given to support or reinforce the behavior of another person. In order to qualify as acceptant behavior, there needs to be a reasonable degree of awareness and sincerity on the part of the initiator. For example, if a teacher is repeatedly observed to emit a monotonous "OK" that has little or no significance to the students, the observer would not record it as Category 2. Rather, he would completely disregard the "OK." Quite often, teacher responses of this sort are nothing more than verbal tics, and as such, fail to qualify as positive reinforcers. In short, the use of the acceptant category should be limited to situations in which it is obvious that the verbal behavior was intended to be a positive reinforcer and, in turn, was perceived by the students as such.

Categories 8 and 18: Correction

CORRECTS: Tells another that his answer or behavior is inappropriate or incorrect.

Correction categories are assigned to verbal behavior that is used for the purpose of voicing disaggreement or giving corrective feedback. The verbal behavior must be directed toward the behavior of another rather than the person himself. Verbal behavior of this sort might include such comments as

"No," "I disagree," "That's not correct," and "The right answer is . . ."

GROUND RULE: Usually, when recording acceptance-correction behavior, only a single category number is recorded. Example: "No, that's not right. The correct answer is . . ." The first comment "No, that's not right," is recorded as Category 8. The second part "The correct answer is . . ." represents additional information and, as such, should be recorded as Category 6. The same holds true for the use of acceptance. The part of the verbal behavior which represents positive reinforcement should be recorded as Category 2 or 12; the remainder, which explains why it is acceptable, constitutes additional information and should be recorded as Category 6 or 16. This concept of following statements of acceptance or correction with a qualifying explanation is sometimes referred to as "public criteria" since it discloses publicly why a given behavior is acceptable or unacceptable.

GROUND RULE: A distinction should be made between Category 2 and positive reinforcement and positive reinforcement which is recorded as Category 1 -- praise or "warming" the climate. For example; the teacher's comment "Right, that's very good, Jim!" would be recorded as Category 2 followed by Category 1: The "Right" is a positive reinforcer, but the " . . . that's very good, Jim!" if emphatic and sincere, tends to praise or "go beyond the call of duty" and, as such, would be correctly recorded as Category 1.

THE AMPLIFY-DIRECT SUBDIMENSION

It should be made clear that amplification and direction are not suited to absolute dualistic positions on a continuum. In the truest sense of the word they are not as contrasting, perhaps, as warm-cool, accept-correct, and elicit- initiate. However, there are some qualities of the two categories which are contrasting. For example, to amplify a student's contribution by asking him to extend or clarify a contribution is certainly different from directing him to do something which is not his idea to begin with. Consequently, because they serve vital fundtions in the RCS -- both rationally and operationally -- amplification and direction have been included and are treated as dualistic qualities in this presentation.

Categories 3 and 13: Amplification

AMPLIFIES THE CONTRIBUTIONS OF ANOTHER: Asks for clarification of, builds on, and/or develops the actions, behavior, comments, ideas, and/or contributions of another.

As the term is used here, the primary purpose of amplification is to

"play up" the contributions of another person. This can be accomplished by (1) building on, extending, and/or expanding a contribution which was initiated by another or (2) requesting another person to clarify or build on his own contribution. In both instances, special recognition and emphasis are directed toward the contribution of another person and, as a result, he perceives his contribution as being significant and important.

> GROUND RULE: Only the request for clarification is recorded as a three or a thirteen. The clarification per se is not recorded as Category 3 or 13. Instead, it is recorded as another category -- probably responding (Categories 5 and 15) or initiating (Categories 6 and 16) in most instances. Example: The teacher's question "What do you mean by that?" would be recorded as Category 3 since he is requesting the student to clarify his last statement. The statement of the response given by the student would not be recorded as Category 13, but rather Category 15 or 16 depending on the nature of his original contribution.

Categories 7 and 17: Direction

> DIRECTS: Gives directions, instructions, orders, and/or assignments to which another is expected to comply.

In this context the direction category describes verbal behavior which is for the purpose of giving another person(s) some type of an assignment, regardless of the time element. For instance, a lesson assignment for the next day, a teacher's request to turn on the lights immediately, and a direction to mix two chemicals together in a beaker would all three be recorded as Category 7. Each describes a specific task to be completed and in each it was implicit that the student should comply. In short, Category 7 is characterized by two qualities: First, an assignment of one sort or another if given to another person and, second, it is implicit that the person comply.

> GROUND RULE: In the event the direction is either harshly delivered or given for the purpose of regimentation or discipline, it would not be recorded as Category 7, but rather Category 9 -- "cooling the climate." Example: The teacher's commands "Sit down immediately!" and "Wipe that smile off your face!" would both be recorded as Category 9 rather than Category 7, since both tend to have a sharp effect on the feelings and emotions of the student(s).

THE TRANSACTIONAL SUBDIMENSION

The transactional concept is predicated on the assumption that information (ideas, opinion, content, subject matter, and the like) is a classroom commodity which can be exchanged on a give-and-take basis. In this context, any participant in a given teaching-learning situation -- teacher or student alike -- can elicit (Categories 4 and 14) or initiate (Categories 6 and 16) information. Should information be requested, it is customary for another person to respond accordingly (Categories 5 and 15).

Categories 4 and 14: Eliciting

> ELICITS: Asks a question or requests information about the content, subject, or procedure being considered with the intent that another should answer (respond).

Normally an eliciting verbal behavior takes the grammatical form of a question: "How many feet are in a mile?" "Who discovered the Pacific Ocean?" However, this is not necessarily the rule. For example, it is possible for the teacher to elicit information by means of a direct statement: "Tell us the number of members in the House of Representatives." By the same token, a student might comment "I don't remember how to find the circumference of a circle." Both of these statements are examples of verbal behavior which is for the purpose of eliciting or securing information and therefore, are correctly recorded as Category 4 and 14 respectively.

Categories 6 and 16: Initiating

> INITIATES: Presents facts, information, and/or opinion concerning the content, subject, or procedures being considered that are self-initiated; expresses ones own ideas; lectures (includes rhetorical questions -- not intended to be answered).

In most cases teacher initiation will be observed in the forms of lecture, relating relevant background, expressing personal opinions, and offering ideas or procedual information. Student initiation is usually observed in the form of voluntary contributions including personal opinions, new ideas, and

relevant information which extends or expands the scope of the subject under consideration. Initiatory verbal behaviors reflect to some degree a quality of individual choice in that the contribution is voluntary and at the discretion of the initiator himself. Should the contribution be offered at the request of another person, it is correctly recorded as 5 or 15 -- responding.

Categories 5 and 15: Responding

> RESPONDS: Gives direct answer or response to questions or requests for information that are initiated by another; includes answer to ones own question.

Verbal responses at the request of another are recorded as Category 5 or 15. Consider the teacher's question "At what temperature Centigrade does water boil?" The correct student response "One-hundred degrees" is recorded as Category 15. By the same token the student inquiry "When does Christmas vacation begin?" is recorded as a 14, while the teacher's reply "Friday, December 16" is recorded as a 5.

> GROUND RULE: To determine whether student talk following a teacher question (Category 4) is Category 15 or Category 16, the following conditions should be considered and met:
>
> Category 15 follows Category 4 when the teacher's question:
>
> A. Requires either a "yes" or "no" response. The rationale here is that yes-or-no proposition limits the student's latitude to answer since he has only two alternatives from which to choose -- yes and no.
>
> B. Is of the simple recall or memory type. "Who discovered America?" "Tell us how far it is from the earth to the sun." "What is the formula for sulfuric acid?" Each of these calls for a memorized answer and is therefore properly recorded as a 15.
>
> C. Is of the convergent type; that is it has only one correct answer. To answer a convergent question normally requires the mental manipulation of two or more items of information. For example: "What is the area of a circle with a diameter of eight inches?" and "How much do seven gallons of water weigh at 60 degrees F?" both represent convergent questions. Answers to questions of this sort are usually not memorized.
>
> Category 16 follows Category 4 when the teacher's question:
>
> A. Solicits the student's opinion about or insights into a

completely new problem, topic, or discussion.

B. Is of the divergent type, that is, it has more than one acceptable answer. Examples of the divergent question are: "How many uses can you think of for a hair pin?" "What are some ways in which we can preserve lumber?" "How might peace be achieved in Viet Nam?"

C. Requires the student to make an evaluation. "Should the United States remain in or get out of Viet Nam?" Which is more suitable, a monetary system based on silver or gold as the standard?" and "Should we abolish the death penalty?" are each evaluative type questions.

GROUND RULE: When the teacher asks for a show of hands (as opposed to a verbal "yes" or "no") and the students comply, the student response is recorded as Category 15 even though there is no observable verbal behavior. The reasoning behind this is that to include the Category 15 completes a logical sequence for the purpose of plotting the matrix. Example: "How many understand?" (pause) "OK," would be recorded 4-15-2.

PART II

MECHANICS OF THE RCS

The mechanics of the RCS are simple and can normally be mastered with six to eight hours of training. Data can be collected "live" in the classroom *per se* by a visiting observer or can be taken from a tape recording of a perviously taught lesson. Whether collecting "live" data or listening to a tape recording, the observer directs his attention *only to the verbal aspects of the interaction*.

Observations are recorded at a *minimum* rate of every three seconds. At the end of each three second interval (or at the end of each verbal transition) the observer decides which of the 19 categories (Fig. 3, page 8) most accurately describes the observed verbal activity. He writes the number of this category on a tally sheet which is normally arranged in a series of vertical columns of 20 tallies each (Fig. 4, page 19). One column of data represents approximately one minute of classroom observation. While recording the category number, the observer simultaneously assesses the current three-second interval. He repeats this systematic "assess-and-record" pattern over and over at a steady three second interval.

SELF-PRACTICE TEST ONE - DISTINGUISHING BETWEEN CATEGORIES 15 and 16

Directions: Consider each of the following teacher elicitations carefully. Then identify each by assigning one of the following:

R = Simple recall; (Category 15)

C = Convergent; (Category 15)

D = Divergent; (Category 16)

E = Evaluative; (Category 16)

_____ 1. Find three different methods for measuring the area of a rectangle.

_____ 2. List the 10 rules of golf etiquette.

_____ 3. Darwin's theory of evolution has been accepted by the scientific world. State why you think this is or is not a valid theory.

_____ 4. Identify the satirical passage in each of the seven following short stories.

_____ 5. How many ounces equal one pound?

_____ 6. Calculate the area of an equilateral triangle of four inches to a side.

_____ 7. Develop an argument in favor of supporting the U.S. space program.

_____ 8. Diagram the following 20 sentences according to the procedures learned in class.

_____ 9. On the attached map, locate a point 80° West longitude and 20° North latitude.

_____ 10. Write the correct name on each of the 50 states shown on this map.

_____ 11. Read the following arguments for and against legislation for tighter federal control of firearms. In terms of the internal consistency of each passage, make a judgment with respect to which presents the most logical position, giving specific evidence to support your position.

_____ 12. At what temperature Centigrade does ice melt?

_____ 13. Construct a sociodrama describing an executive meeting of a dictator and his chief lieutenants.

_____ 14. Observe a welder in an industrial plant for 30 minutes. Rate his performance in terms of 1) efficiency, 2) speed, and 3) quality of work.

_____ 15. What do you think that the Biblical statement "An eye for an eye and a tooth for a tooth" means?

GROUND RULE: In the event that more than one category of verbal behavior is observed within a given three-second interval, the observer records each and all of the category numbers in proper sequence. For example, suppose that the following interchange was observed to transpire within a given three-second interval:

Teacher: "What is 12 times 12?"
Student: "One hundred forty-four."
Teacher: "Right!"

The above interaction would be correctly recorded "4-15-2" even though it occurred in entirity within (or less than) a three-second interval.

GROUND RULE: When appropriate, the observer may wish to jot down brief marginal notes describing a major change or shift in class organization, group size, subject matter, etc.

GROUND RULE: When recording data, a ten (10) is inserted between student talk observations to indicate that the same student shifted from one category to a different one. A ten is not inserted between student talk observations when another student shifts to a different category. Example:

Speaker	Category Number
Teacher	4
Student A	15
	10
Student A	16

(Student A shifted from Category 15 directly to Category 16; thus a ten (10) is inserted between the 15 and the 16.)

Teacher	4
Student A	15
Student B	16

(Student B followed Student A's Category 15 with a Category 16; thus a ten (10) is not inserted between the 15 and the 16.)

PLOTTING RAW DATA IN A MATRIX

The chronologically ordered listing of observed category numbers arranged in columns of 20 tallies each on the collection sheet is called "raw" data. Raw data provide a sequential look at the transpired classroom verbal behavior that is quite similar to a play script. In other words, by studying the raw data one can roughly reconstruct the classroom verbal activity to determine the order in which the teacher and/or the student(s) talked as well as what kind of talk occurred.

DATA COLLECTION FORM

	1	2	3	4	5	6	7	8	9	10
1.										
2.										
3.										
4.										
5.										
6.										
7.										
8.										
9.										
10.										
11.										
12.										
13.										
14.										
15.										
16.										
17.										
18.										
19.										
20.										

Fig. 4 -- Tally Sheet for Collecting RCS Data

While raw data provide a sequential look at the classroom verbal behavior, they do not provide the information required to determine how often a particular verbal pattern occurred (i.e., how frequently did the teacher praise or encourage student-initiated talk -- the 16-2 pattern, or how frequently did the student respond to a teacher question -- the 4-15 pattern, and so on). Information concerning frequency of pattern occurrence can be obtained directly from raw data, but to do so would require a thorough analysis of the complete listing of raw data for each single pattern of category pairs.

Therefore, in order to convert raw data into more menageable frequency data they are plotted into a matrix similar to the one shown in Fig. 5. Prior to actual plotting, raw data are bracketed in pairs as shown below:

```
                                  10
                                     ]   First pair
                                   6
                 Second pair [
                                   6
                                     ]   Third pair
                                   4
Fourth pair, etc.          [
                                  15
                                     ]
                                   2
                           [
                                   6
                                     ]
                                  16
                           [
                                   3
                                     ]
                                  10
```

Each bracketed pair corresponds with a specific cell of the matrix. For example, the first pair above represents the 10-6 cell (tenth row down from the top and sixth column over from the left). The next pair represents the 6-6 cell and so on. For each bracketed pair, a tally mark is placed in its corresponding cell of the matrix. The total number of tally marks in a given cell constitutes the "loading" of that cell. Fig. 5, illustrates a 19x19 matrix with the cell loadings for the bracketed raw data shown above.

	1	2	3	4	5	6	7	8	9	11	12	13	14	15	16	17	18	19	10
1																			
2						1													
3																			1
4														1					
5																			
6				1		1									1				
7																			
8.																			
9																			
11																			
12																			
13																			
14																			
15		1																	
16			1																
17																			
18																			
19																			
10						1													

Fig. 5 -- 19x19 Matrix With Plotted Data. From Page 20.

Once a person learns the simple mechanics for plotting data, he can plot data indefinitely as long as he can endure the monotomy. Fortunately, raw data need not be plotted manually for research purposes. Computer programs are available which enable matrices to be plotted at fantastic rates of speed, accuracy, and economy. In order to demonstrate an operational understanding of the matrix plotting process, there follows a Matrix Plotting Self-Test.

Self Practice Test Two - Matrix Plotting

Plot the following RCS raw data in the 19 x 19 blank matrix on the next page.

10	6	16
7	13	3
7	5	16
10	18	2
10	10	6
14	16	4
5	3	13
10	15	5
6	2	4
6	1	15
10	14	10
16	15	17
16	15	10
2	12	3
3	10	15
16	13	2
1	15	7
4	10	10
15	16	16
8	11	10

Situation _____ Date _____ Name _____

	1	2	3	4	5	6	7	8	9	11	12	13	14	15	16	17	18	19	10	T
1																				
2																				
3																				
4																				
5																				
6																				
7																				
8																				
9																				
11																				
12																				
13																				
14																				
15																				
16																				
17																				
18																				
19																				
10																				
T																				
%																				

MEASURES YIELDED BY THE RCS.

The RCS is designed to produce the following descriptive measures.

1. Percentage of total for each of the 19 categories (re: bottom row of plotted matrix, Fig. 7, page 37).

2. A variety of comparative category ratios.

3. A master matrix consisting of 361 cells (re: Fig. 7).

4. Four submatrices within the master matrix (re: Fig. 6).

CATEGORY PERCENTAGES OF TOTAL: CALCULATION PROCEDURES.

Individual category percentages of total can be calculated for each of the 19 categories (or combinations of categories). In order to calculate an individual category percentage of total for a given category, the total of tallies for the given category is divided by the grand total of tallies for that particular set of data. Following is the mathematical representation of this in formula form:

$$\text{Category Percentage of Total} = \frac{\text{Total Tallies of Given Category}}{\text{Grand Total of Tallies}}$$

Total tallies for a given category can be calculated two different ways:

1) From the columns of raw data recorded on a data collection sheet, simply count the number of times each of the categories is recorded. This is a bit time consuming in that it will require going through the entire set of data in order to get the total for each category represented (maximum of 19 times assuming that each category has been recorded at least once). Naturally, one rarely obtains a set of data in which every one of the categories is represented. It is helpful if a recorded category is crossed out with a single pencil mark as it is counted. This will eliminate the possibility of counting it incorrectly more than once while at the same time it does not blot it out such that a recount is impossible in the event as error is made in the original count:

-10-

-6-

-4--

-15-

-2-

-6-

-10-

2) From a plotted matrix, simply total the matrix column of raw tallies for a given category (the next to the bottom row of numbers in Fig. 7 lists the 19 category totals for that particular matrix. For example, Category 2 equals 13 tallies, Category 3 equals 20 tallies, etc.).

Regardless of which of the above methods used, the procedure for final calculation of individual category percentage of total is the same and was outlined above in paragraph one (i.e., divide the total tallies of the given category by the grand total of tallies). Thus, for Category 2 in the matrix shown in Fig. 7 (using method two above), the percentage of total would be 9.7%. This is calculated by dividing 13 (the number of raw tallies in column two of the matrix in Fig. 7, shown in the second row from the bottom) by 134, the grand total of tallies (i.e., 13/134 = .097. To convert the decimal (in this case, .097) to a percentage, the decimal point is moved two places to the right (or multiply the decimal by 100) to get 9.7%.

On the following page is Self Practice Test Three which is designed to test your skill in calculating individual category percentages of total.

Self Practice Test Three - Category Percentages of Total

Part A

From the following set of raw data, calculate the category percentage of of total for each of the categories represented and record your percentages on the form provided to the right of the raw data.

DATA COLLECTION SHEET

	1	2	3
1.	10	15	10
2.	6	2	7
3.	6	6	7
4.	6	13	10
5.	4	4	10
6.	15	15	10
7.	15	15	13
8.	16	2	10
9.	16	16	10
10.	3	16	5
11.	16	18	5
12.	2	10	10
13.	6	16	7
14.	14	16	4
15.	3	3	15
16.	14	16	15
17.	5	8	2
18.	5	13	6
19.	5	5	6
20	4	10	10

ANSWERS

Category Number	Percentage of Total
1	_____
2	_____
3	_____
4	_____
5	_____
6	_____
7	_____
8	_____
9	_____
11	_____
12	_____
13	_____
14	_____
15	_____
16	_____
17	_____
18	_____
19	_____
10	_____

Part B

From the data plotted in the matrix on the next page, calculate the category percentages for each of the categories and record your answers in the bottom row of the matrix marked %.

	1	2	3	4	5	6	7	8	9	11	12	13	14	15	16	17	18	19	10	T
1	1			1		1														
2			4	1		2	1						4						1	
3	1	4	3	1									5	4					2	
4				1										8	3					
5			1		2												1			
6				4		3	1								2		1			
7							4								2				3	
8						2	1										1			
9																				
11													1							
12																				
13												1		1						
14		1	1	1	2		1					1	2	2	2					
15		6	5					3						2	1					
16	1	2	3			1	1	1		1					4					
17																				
18			3														1			
19																				
10				3		2							1						1	
T																				
%																				

Mathematical comparisons can be calculated for any two categories or combinations of categories. Comparisons of this sort are called "ratios." A ratio is calculated by dividing the total of a given category (or combination of categories) by the total of another category (or combination of categories). As used here, the term "total of a given category" can be expressed in two different forms -- either as the raw tally total of that category or the percentage of total for that category. Using either form for the purpose of calculating a ratio produces essentially the same quantity. Both of these concepts -- raw tally total and category percentage of the total -- are discussed above.

For example, in order to calculate the 2/8 ratio for the plotted data shown in Fig. 7, page 37, we could use either of two methods. First, we could divide the total raw tallies for Category 2 (which is "13," as shown in the second cell from the left in the second row from the bottom of the matrix) by the total raw tallies for Category 8 (which is "four," as shown in the eighth cell from the left in the second row from the bottom of the matrix). This produces a 13/4 ratio or a 3.25 ratio if carried out to a mixed number.

Second, we could divide the category percentage of the total of Category 2 (which, when calculated in this case, turns out to be 9.70%) by the percentage of the total of Category 8 (which turns out to be 2.98%). This produces a 9.70/2.98 ratio or a 3.25* ratio if carried out to a mixed number.

To repeat, the rule for calculating a ratio is to divide the total of a given category (or combination of categories) by the total of another given category (or combination of categories). The formula form for this is:

$$\text{Ratio} = \frac{\text{Category A Total (or Combination)}}{\text{Category B Total (or Combination)}}$$

*Note: There may be slight discrepencies between calculated ratios when using raw tally totals as compared to category percentages of the total. This depends on how closely percentages are rounded off before dividing.

A variety of ratios can be produced using RCS data depending upon the peculiar needs of a particular research design or teaching experience. Following are four typical ratios and an explanation of each:

A. The "Warm-Cool" or 1/9 Ratio: This ratio compares the total amount of "warm" teacher talk with the total amount of "cool" teacher talk. Calculated by dividing the total amount of Category 1 by the total amount of Category 9.

B. The "Accept-Correct" or 2/8 Ratio: This ratio compares the total amount of teacher talk used for the purpose of "accepting" with the total amount of teacher talk used for "correcting." Calculated by dividing the total amount of Category 2 by the total amount of Category 8.

C. The "Elicit-Initiate" or 4/6 Ratio: This ratio compares the total amount of "eliciting" by the teacher with the total amount of teacher "initiation." Calculated by dividing the total amount of Category 4 by the total amount of Category 6.

D. The "Student-Teacher" or S/T Ratio: This ratio compares the total amount of "Teacher" talk with the total amount of "Student" talk. Calculated by dividing the total amount of Categories 11-19 by the total amount of Categories 1-9.

As described earlier, two or more categories can be combined when calculating ratios. For example, an "acceptance - rejection" ratio can be calculated by dividing the combined total of Categories 1, 2, and 3 by the combined total of Categories 8 and 9. By the same token, it is possible to contrive a variety of ratios involving student categories. For example, a student "warm-cool" ratio can be calculated by dividing the total of Category 11 by the total of Category 19. A "student-teacher initiation" ratio can be calculated by dividing the total of Category 6 by the total of Category 16.

Self Practice Test Four: Ratios

From the data plotted in the matrix shown in Fig. 7, page 37, make the following calculations:

1. The 1/9 ratio
2. The 2/8 ratio
3. The 3/7 ratio
4. The 4/6 ratio
5. The 14/16 ratio
6. The 15/16 ratio
7. The S/T ratio
8. The 1, 2, 3/8, 9 ratio
9. The 6/16 ratio
10. The 4, 5, 6/14, 15, 16 ratio

Answers:

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____
7. _____
8. _____
9. _____
10. _____

THE RCS MATRIX AND SUBMATRICES: MATRIX INTERPRETATION

The RCS produces a master matrix containing 361 cells (re: Fig. 7). A given cell can be located in the matrix by its row and column numbers. For example, the 15-2 cell is located by counting down to the 15th row and over to the second column. In other words, the first number of a pair of numbers assigned to a given cell designates the number of rows down in the matrix and the second number of the pair designates the number of columns over. Using this rationale, each of the 361 cells can be named and identified properly (i.e., 1-1 cell, 1-2 cell, 1-3 cell . . . 10-18 cell, 10-19 cell, and 10-10 cell). This concept was discussed earlier in a somewhat different context in the section Plotting Raw Data in a Matrix, page 18.

The study of a plotted matrix for the purpose of determining cell loadings (i.e., how frequently a particular pattern of verbal behavior occurred) can provide a wealth of information concerning the verbal behavior of that particular teaching-learning situation. Studying a plotted matrix for this purpose is called "matrix interpretation."

The mechanics of matrix interpretation are not particularly difficult to master. It simply involves the skill of identifying and/or naming properly each of the 361 cells according to the rule outlined above: each cell is identified by a corresponding pair of numbers where the first number of the pair indicates the number of rows down and the second number of the pair indicates the number of columns over.

For example, in interpreting the matrix shown in Fig. 7, page 37, we note that the loading of the 15-2 cell is "six" (i.e., fifteen rows down and two columns over reveals the number "6" indicating that Category 2 followed Category 15 a total of six times). Using the same rationale, we find that the 4-15 cell has a loading of "eight" (four rows down, 15 columns over yields the number "8"). One could continue this "academic exercise" to the point

where each of the 361 cells of a given matrix has been identified by numbered pair and its proper loading determined accordingly.

Obviously, the majority of the cells in the matrix shown in Fig. 7 show a loading of "zero." This means that that particular verbal pattern was not observed. For example, the 6-7 cell (sixth row down and seventh column over) has a loading of "zero." Interpreted this means that at no time during the observation period did a teacher direction (Category 7) follow teacher initiation (Category 6). Zero loadings are also noted for cells 16-18, 13-16, 6-13, and 16-9 to name four.

In this connection, it is possible to determine a dimension of flexibility as it relates to verbal behavior: flexibility is determined by the total number of cells in the matrix that have a loading of one or more. Consequently, the greater the number of "loaded cells," the greater the flexibility and, conversely, the fewer the number of "loaded cells," the less the verbal flexibility. A statistic variable can be obtained for research purposes by simply determining the number of loaded cells in a given plotted matrix. This variable is called the "flexibility factor."

Perhaps one of the most unique characteristics of the RCS is the four submatrices contained within the 19 x 19 master matrix (Fig. 6). Within the single master matrix are situated four complete submatrices showing a variety of sequential verbal patterns including:

A. Teacher-Teacher Talk: Various sequences of one kind of teacher talk followed by another kind of teacher talk. Example: Teacher lecture (Category 6), followed by teacher direction (Category 7), followed by teacher question (Category 4), and so on.

B. Teacher-Student Talk: Various sequences of teacher talk followed by student talk. Example: Teacher question (Category 4), followed by student response (Category 15) or teacher lecture (Category 6),

followed by a student question (Category 14).

C. Student-Teacher Talk: Various sequences of student talk followed by teacher talk. This submatrix shows the kinds of teacher talk that follows student talk. Example: Student volunteers a contribution (Category 16) followed by teacher acceptance (Category 2) or student response to a teacher question (Category 15) followed by teacher correction (Category 8).

D. Student-Student Talk: Various sequences of one kind of student talk followed by another kind of student talk. This is probably the most intriguing of the four submatrices. Using this submatrix, it is possible to represent logically a student discussion being carried on in the absence of any teacher verbal participation. Example: Student question (Category 14), followed by student response(Category 15), followed by student correction (Category 18), followed by student initiation (Category 16), and so on.

Self Practice Test Number Five is on page 36. This test will test your skill in interpreting a matrix. For additional practice in interpreting matrices, there are four plotted matrices (each different) located at the back of this manual. These are marked Situation 1, 2, 3, and 4.

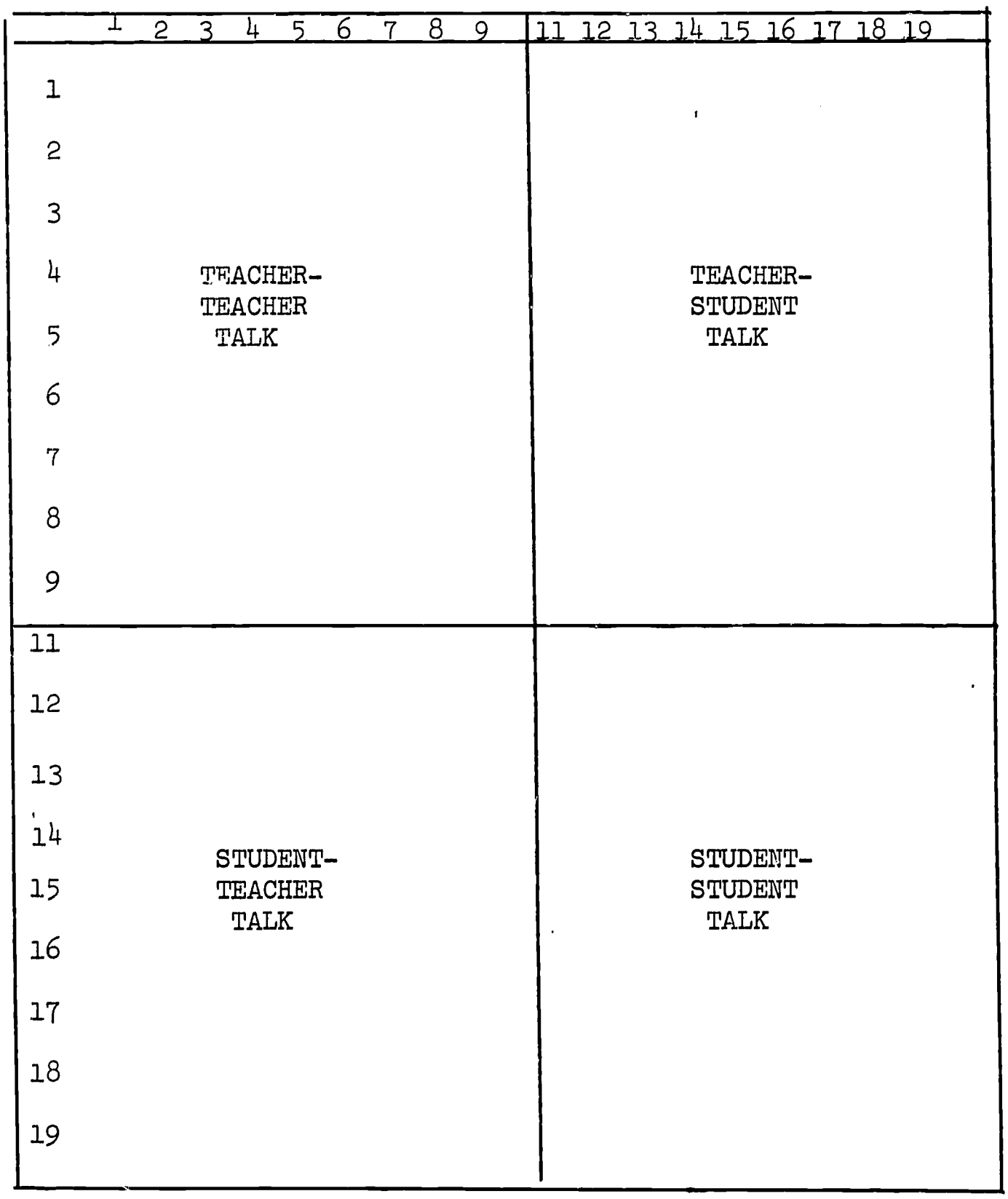

Fig. 6 -- Diagram of 19 x 19 Master Matrix Showing Four Submatrices and Types of Verbal Behavior in Each.

Self Practice Test Five

Self Practice Test - Matrix Interpretation

From the data plotted in Fig. 7 on the next page, make the following interpretations:

1. What is the loading in the 6-6 cell?

2. The 4-16 cell?

3. The 1, 2, 3 block?

4. The 15-16 block?

5. The Student - Student submatrix?

6. The Student - Teacher submatrix?

7. The 14-16 cell?

8. The 18-3 cell?

9. How frequently did a 14 precede a 5?

10. An 8 precede a 6?

11. An 11 follow a 16?

12. A 2 follow a 3?

13. How frequently did the teacher lecture following acceptance?

14. How frequently did silence or confusion precede a teacher direction?

15. How frequently did silence or confusion follow a teacher direction?

16. How frequently did the teacher follow any form of student talk with "warm" talk?

17. With "cool" talk?

18. How much of the total talk is located in the Student - Student submatrix?

19. In the Teacher-Teacher submatrix?

20. From the data in this matrix, would you consider the teaching performance to be effective or ineffective?

21. Why?

	1	2	3	4	5	6	7	8	9	11	12	13	14	15	16	17	18	19	10	T
1	1			1		1														3
2			4	1		2	1						4						1	13
3	1	4	3	1									5	4					2	20
4				1										8	3					12
5			1		2												1			4
6				4		3	1								2		1			11
7							4								2				3	9
8						2	1										1			4
9																				
11													1							1
12																				
13												1		1						2
14		1	1	1	2		1					1	2	2	2					13
15		6	5					3						2	1					17
16	1	2	3			1	1	1		1					4					14
17																				
18			3														1			4
19																				
10				3		2							1						1	7
T	3	13	20	12	4	11	9	4		1		2	13	17	14		4		7	
%																				

Fig. 7 -- A 19 x 19 Matrix With Plotted Data

PART III

Uses of the RCS

The RCS is an observational system purposely designed to assess comprehensively the broad spectrum of teacher-student verbal behavior within the teaching-learning situation. As such it has been found to be a useful tool in research as well as in the training of teachers.

When used as a research tool, because of the inherent reciprocity factor, the RCS permits the conceptualization and subsequent measurement of more verbal behavior variables than might be possible without such an instrument entirely or using other instruments of this sort. By the same token, when used as a training tool, the reciprocity factor opens the door to the discovery of a greater number of possible verbal behavior patterns of teaching that might otherwise escape the imagination and consideration of the trainee.

The power to conceptualize and measure new and unusual verbal patterns of behavior through the use of the RCS is extremely important and should be explored here in more depth. Perhaps an observation that came up while field testing the instrument during its infant stage might help to clarify and support this point. Shortly after the instrument was created, several of us who were involved in its development were using it in a field project as a research instrument. We were somewhat disappointed to discover that we were not recording a very wide variety of student talk. Most of our student recordings were in the forms of student response (Category 15), student question (Category 14), and an occasional student initiation (Category 16). Almost no observations were recorded where students had "warmed" or "cooled" the climate, supported or corrected another, or given directions, etc. We began to fear that the system showed promise only in terms of its theoretical implications and that it might be of very limited use as a field instrument. However, after several more days in the field,

observers began to make comments such as, "Today I heard an 11" (student "warms" the climate) or "I observed a student give a direction" (Category 17). Before too many days had passed, each of us was recording a greater variety of student talk. However, we were now somewhat puzzled as to why we had failed to record a wider variety of student talk earlier. We were quite certain that the students who were observed earlier in the classrooms were not significantly different from those observed more recently. Our only reasonable explanation for this dilemma was that we, as observers, had become sensetized to the more "uncommon" varieties of student talk. They had been there all the time, but until we were consciously aware of what to look for, we were unable to see them. Now, after proper training and field experience, trained observers are regularly observing and recording a variety of student talk in the classrooms where it occurs.

It is reasonable to assume that teachers, like observers, need to be trained (sensetized) to identify and recognize the more subtle and uncommon examples of student and teacher verbal behaviors. Until a teacher acquires this skill, he is unaware that such behaviors are possible. Consequently, he can neither recognize them nor produce them in a teaching learning situation.

To shift a bit to a more theoretical vein, two important points should be raised concerning the utility of the RCS as a feedback-control mechanism. First, upon learning the skill per se of the RCS, a teacher is prepared to become more aware of and, therefore, better able to control his verbal teaching behavior. Consequently, he is in a better position to plan and to produce verbal behaviors that are appropriate to a particular learning situation.

Second, as a feedback mechanism, the RCS produces meaningful data

concerning the verbal behavior that both he and his students have generated in a given situation. He can obtain these data in at least two convenient ways: he can invite a trained colleague to visit his class and collect the data or he can record a lesson using a tape recorder and, later on, he can play back the taped lesson while he collects the data himself. Either mode of operation is quite satisfactory.

By taking advantage of the "awareness-control" and "feedback" benefits offered by learning to use the RCS allows the teacher an opportunity to view his teaching performance more systematically and more objectively. He can plan the verbal (and certain content) phases of a lesson using RCS categories and patterns, teach the lesson according to plan while data are collected, and, finally, analyze his teaching performance by studying the collected data. All of this gives the teacher added advantage in predicting and controlling the conditions of the teaching-learning situation.

Projecting into the future, there is reason to believe that the reciprocity factor, as demonstrated in the RCS, can be adapted and incorporated into other kinds of systems and situations involving dialogue and verbal interaction. For example, in its current version, the RCS itself can be useful as a means for obtaining data concerning the verbal interaction of a teacher and a single student in a one-to-one situation (individualized learning). This opens the door to equally useful possibilities. Either in its present form or with minor revision, the RCS could be used to assess the verbal interaction between a conselor and his counselee. Outside the usual school setting, similar instruments could be used to study the verbal interaction between a salesman and customer or between a doctor and patient. These are only a few of the possible applications for instruments of this type.

To sumarize the uses of the RCS, and simultaneously to describe briefly a few of the historical aspects of the development and refinement of the instrument, there follows a resume of several projects and/or activities that have incorporated the RCS as either a research or a training tool. Development of the system was formally initiated during the Spring of 1967 and the system evolved to its present version in late 1967. Since that time, the RCS has been (or is currently being) used in these capacities:

1. As a training tool for the preparation of undergraduate pre-service secondary and elementary teachers at the University of Florida.
2. As a training tool for the preparation of cooperating teachers in the Clay County, Florida, schools. In turn, these trained cooperating teachers supervised the internships of selected pre-service secondary interns who were enrolled in the programs described above in Number One.
3. As both a training and a research tool in a study designed to investigate the effects of systematic observation training and microsimulated teaching experiences on the verbal behavior of student teachers; conducted at West Virginia University.
4. As a research tool in a study designed to investigate the effects of human relations skill training on teachers of culturally deprived students in selected schools of Alabama, Florida, and Georgia; conducted by the Southeastern Education Laboratory, Atlanta, Georgia.
5. As a research tool in an evaluation study designed to assess a random sample of classroom teachers in Nassau County, Florida, using three different observational systems simultaneously in the

same classroom. The three instruments used in this study were the RCS, the Teachers' Practice Observation Record (developed by Brown (2)), and the Florida Taxonomy of Cognitive Behavior (developed by Brown, Ober, and Soar (3)).

6. As a training tool in a three-day conference in which some 90 administrators and supervisors were trained to use the system in order that they, in turn, could train their respective faculties; sponsored by the Supplementary Educational Center, Metropolitan Atlanta Region, Atlanta, Georgia.

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APPENDIX

Situation 1 Date _____ Name _____

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Situation 2 Date _____ Name _____

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Situation 4 Date _____ Name _____

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