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ABSTRACT

The 99 observation systems described in this anthology describe measurable categories of behavior, rather than global concepts. These systems function as a [illegible]--a language for describing communication. Each represents one or more of seven major categories: affective, cognitive, nonverbal, activity content, sociological structure, and physical environment. Most systems use specific predetermined categories such as "teacher asks question," and "pupil gives narrow answer;" a code is assigned to each category and coded sequences are summarized in a form useful for decision making, by a technology known as interaction process analysis. Instruments vary according to number and type of subjects observed, setting, category dimensions, and uses reported by author. A typical instrument is designed for group observation of teacher and pupils in classroom settings; it describes affective and cognitive categories, and has been used by researchers to describe actual teaching in existing classrooms and then to reformulate models of effective teaching. Instruments have also been used for teacher training and supervision, as substitutes for tests, as content for new curriculum, or to specify conditions of learning. Other settings include counseling situations, prisons, hospitals, and industry. (The major portion of this document--which has been removed--contains the instruments, abstracts, and a 1000-item bibliography.) (CP)

MIRRORS FOR BEHAVIOR III

AN ANTHOLOGY OF OBSERVATION INSTRUMENTS

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Humanizing Learning Program
Research for Better Schools, Inc.

The First Edition of Mirrors for Behavior was originally published in 1968 as Volume 3, No. 2, a special edition of the Classroom Interaction Newsletter in cooperation with Research for Better Schools, Inc. The Second Edition was similarly published as a special two-volume paperback edition in 1970.

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We wish to express our appreciation to the authors of these instruments and their publishers for the generous cooperation which made it possible to bring their work together in one collection and to extend our apologies for our considerable intrusion into their busy schedules. We appreciate the patience with which they answered our many questions and helped us accurately represent their work.

Our continuing thanks to Leon Ovsiew, Russell A. Hill, and James W. Becker whose encouragement in 1967 was responsible for our turning *Mirrors for Behavior,* then a monograph, into the first edition of this anthology, and to Robert G. Scanlon who, in 1973, similarly encouraged this new, enlarged, third edition.

Thanks, too, to John W. Thomas for assistance with the cognitive commentary and to Yvonne Agazarian for her many contributions, and especially for her work on environmental motivators as related to Maslow's hierarchy.

We further wish to acknowledge the people who processed this third edition from plan to press: Theresa Haskins, for her mechanical and layout skills; Carolyn Matticola, who organized the 1,000+ entry bibliography; and Susan Nickleach, for her editing, persistent proofreading and sleuthing skills.

And, finally, to both Pagel and Joan Lynn Weiner who saw this project through from beginning to end.

PREFACE

In 1967 the *Classroom Interaction Newsletter* in cooperation with Research for Better Schools, Inc., published a special edition containing twenty-six of the systems contained in this anthology. They were the result of a collection made to determine the best instruments to use for a research problem. In analyzing that original collection, we found the contents of the systems useful in the development of a new "21st century education program" we proposed to Research for Better Schools. That now successful program has since been named the *Humanizing Learning Program*, and its major task remains as we intended: the development of curriculum based on content to promote intellectual, social and emotional growth and the development of new processes for getting that content to learners.

During the analysis of the twenty-six systems published in the original anthology we concluded that a survey of additional instruments, particularly those designed for specific classroom purposes and those from outside education, might shed light on the problems we were facing in understanding the processes of communication in general and in specifying new roles for teachers in particular. Thus, the survey continued.

Responses to our queries came from many quarters both inside and outside the discipline of education. We were unable to publish all that we acquired and had yet to digest all that we had learned. A second anthology, published in 1970, contained selected materials culled from the many we had received.

Since then we have continued to emphasize instruments which add new concepts to those already represented in the initial collections; and, to do so, we have selected from fields such as group dynamics, psychotherapy, medicine, industry and anthropology, as well as from education. The nine systems in this expanded and reordered third edition represent all of these fields.

These observation systems have been used in a wide variety of interactive settings of which the classroom is but one, and now it is possible to locate a use for analytic system for describing communication in nearly every setting in which it occurs: business or faculty meetings, administrator-subordinate interactions, individual and group therapy sessions, interviews, family discussions, and in a wide variety of classrooms.

The documentation of the content of and environment for learning which our schools (and other "learning" places) provide comes largely from the development and use of these observation instruments, these *meta-languages* for research. Research related to the realities of the school's efforts to teach social and emotional development to pupils is difficult to find. The teaching of skills in these areas occurs so infrequently that a researcher encounters

difficulty in collecting enough data to analyze. In general the limited but concrete research findings support the contention that teaching practice does not respond to the call of those who prescribe that the school be a place which enables pupils to learn how to *process* and *use* information as well as to store it.

It could be said that teachers are "teaching" perhaps unintentionally, but nevertheless in reality that exploration of one's own feelings and personal reactions has no place in the classroom scene. Since social and emotional development require exploration of one's own feelings, expectations, emotionally charged values, self-concept and the sharing of information about "how I see thee, and how thou seest me," there is then little evidence that schools consciously or otherwise encourage activities which promote social or emotional development of students. Insofar as the current conditions of instruction in our schools are concerned, the evidence is conclusive: those activities which fall under the general heading of optimizing human potential are largely missing.

But it is not the research findings developed with interaction analysis instruments that we find fascinating, nor is it the instruments themselves. The research findings have been generally known and come as no great surprise to viewers of the classroom scene. For the editors, the fascination of these instruments is of a different kind and is more immediate. These instruments contain a wide variety of categories which are descriptors of replicable behaviors. These descriptors of behavior can be used as prescriptions for skills to be acquired by people to help them become what they want to be. And this, for us, is their greatest fascination.

It is this use of these instruments that we feel will be their real contribution. Mankind made great progress when he began to discover the "rules of nature" that we call science. Whenever he discovered a cause-and-effect relationship from which he could predict the future consequences of a present act, life became more manageable. This growth has been almost exclusively in what we call the "hard" sciences, and we live in a world which this heritage has produced. Today's resources would be unavailable were it not for the centuries of accumulated knowledge that allowed us to move from fantasy and superstition to our present abilities to predict the consequences of our activities. (Unfortunately our ability to heed our own predictions is still distressingly inadequate.)

Collecting and organizing information about the world in which we live is the province of science. We call the well-established sciences of biology and medicine, "life sciences" but we have yet to develop a "science of living." It has taken many millenia for the life sciences to evolve from magic and mythology and to earn the title of science. But there is no science of living only because the search is much younger and we have yet to learn effective ways to collect data about ourselves; data needed to test hypotheses and gain new knowledge about better ways of living.

Because there is no science of living to provide a relatively safe and rewarding framework in which to experiment with our own life styles, most of us tend to operate in familiar patterns which we have found at least tolerable. Many of us live out our days feeling unfulfilled and disappointed; frustrated because our fantasy-based expectations about each other are not met; and feeling trapped by our inability to ask the very questions which need asking from those around us most able to give us the information we need. For instance, there is a big difference between feeling that *you are* hard to get along with and knowing that certain kinds of specific *behaviors you use* are hostile or non-supportive and tend to make people around you feel defensive. The former implies what you *are*. The latter indicates not what you are but *how you act*, and leaves you with an option to change those acts and thus their consequences.

The instruments in this collection represent to us what the title *Mirrors for Behavior* implies. They are mirrors for the social scientist in us all, mirrors that give us an opportunity to see more than what we have seen before. Mirrors for behavior reflect how we act; they both "tell it like it is" and provide the means to help us become what we would rather be.

Spring 1974

Anita Simon
E. Gil Boyer

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Content for Emerging Education – Observation frameworks can themselves be used as content because these systems contain behavioral specifications for potential new curriculum content including such skills as how to think, communicate and act effectively and responsibly.

Specifying the Conditions of Learning – Observation systems can be used for describing the conditions needed to support any learning environment. In order to specify *knowing how* rather than *knowing about* as content, low-risk environments must be provided.

To provide the necessary environment for such learning, teachers must first be aware of, and in control of, their own verbal and nonverbal communication to students just as they now control the subject matter of the lessons taught in traditional classrooms. Second, they must understand what "kinds of environments" tend to foster or inhibit what effects in others.

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A brief description of each of the systems listed in the following order:

1 Adams-Biddle
2 Altman
3 Amidon (MCS)
4 Amidon-Hunter (VICS)
5 Anderson, A.
6 Anderson, H. H.
7 Anderson-Bingman (COMIC)
8 Argyris
9 Aschner-Gallagher
10 Bales
11 Balzer-Evans (BTBI)
12 Barnes
13 Bellack
14 Bemis-Luft-Liberty (SCIOS)
15 Blumberg
16 Borgatta (BSs)
17 Brophy-Good
18 Brown (TPOR)
19 Brown, et al. (FTCB)
20 Buehler-Richmond
21 Clements
22 C.E.R.L.I. (CVC)
23 Denny-Rusch-Ives (CCOS)
24 Dibner
25 Dodl
26 Flanders (FSIA)
27 Flanders (EXPANDED)
28 Fuller (FAIR 33)
29 Gallagher
30 Galloway
31 Hall
32 Heger (MINI TIA)
33 Herbert (SAL)
34 Hill (HIM)
35 Hoffman
36 Honigman (MACI)
37 Honigman-Stephens (SAP)
38 Hough
39 Hughes
40 Hunter
41 Jansen
42 Jason (MIOR)
43 Jecker-Maccoby-Breitrose
44 Jones (SACC)
45 Joyce
46 Kounin
47 Kowatrakul
48 Lindvall
49 Lipe-Steen-Quirk (PLAN-SOS)
50 Longabaugh (R-P)

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TABLES

dependent on the needs of the user rather than on the expectations of the author who created the system. Thus, systems have been used on populations other than those for which they were originally designed.

FIGURES

Section One

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OVERVIEW

MIRRORS FOR BEHAVIOR III OVERVIEW

yone thinks he knows how to communicate, and in fact most of us spend most of ou dealing with verbal or written messages. Yet, communication is a good example of the old ge that the more familiar the phenomenon, the less known about it. Until the past decade, few tools have been available for the study of dynamic, on-going interaction between people.

Although increasingly available in the literature of the professional, for the culture as a whole, tools for helping people to more effectively transfer information to others are relatively unknown. Those disciplines such as education which depend heavily on the effectiveness of information transfer have been particularly hampered by this lack.

THE META-LANGUAGE OF COMMUNICATION

Meta: Used with the name of a discipline to designate a new but related discipline designed to deal critically with the original one.* (meta-language: the language of language)

This anthology is about such tools, which can be thought of as "meta-languages" for describing communication of various kinds. Observation systems are simply sets of categories which describe verbal and nonverbal behavior. The categories which make up the systems are related to communication as parts of speech are to grammar. For instance, "What is boy?" is a question that would not be answered by a grammarian with a comment like "A boy is a preadolescent male" but rather, "'Boy' is a noun." In a similar way, the statement "You are a good boy" in an observation system for describing teacher-pupil talk would be categorized as *praise*, and "Good boys don't do that" as *criticism*. Categories, then, are types of talk which bear the same relationship to the analysis of communication as parts of speech do to grammatical analysis (see Figure 1).

People in many professions use a "technical language" to help them talk precisely about behaviors or phenomena within their profession. To the extent that this sort of tool is available, knowledge is accurately transmittable from one practitioner to another. In fact, this is one of the discriminating characteristics that separates a "science" from an "art"; and the "scientific method" can be largely thought of as the development of techniques for describing and replicating phenomena and processes. To be useful for describing communication, a "language" needs to meet three requirements.

*Webster's Seventh New Collegiate Dictionary. Springfield, Mass., G. & C. Merriam Company, 1969, p. 532.

They are:

First, it must be descriptive as opposed to evaluative, and, although it can be used to analyze emotional or evaluative situations, the language itself must be descriptive of the values or feelings being discussed.

Second, the language must deal with what can be categorized or measured, and

Third, it must deal with small bits of action or behavior rather than with global concepts.

To the extent that a language meets these three requirements, that language is useful to help isolate behavioral phenomena and to allow for replication with minimal distortion. It is our hypothesis that the lack of such meta-languages has crippled the ability to transmit information about effective teaching, counseling, supervising, therapy and other helping- or change-agentry behaviors to novices and others who want to improve their communication skills.

Figure 1: THE LANGUAGE OF LANGUAGE IN GRAMMAR AND COMMUNICATION

GRAMMAR		COMMUNICATIONS	
SENTENCES (combinations of parts of speech)	Declaratory Interrogatory Imperative Exclamatory	PATTERNS (combinations of types of talk)	Discovery Problem Solving Drill Fight
PARTS OF SPEECH	Adjective Noun	TYPES OF TALK (categories)	Praise Criticism
WORDS	good (bad) boy	WORDS	good (bad) boy

This is, in part, because the "languages" for explicitly describing the process of behaving while that process is taking place have not been readily available. It is only recently that concerted attention has been given to this problem and only within the past few decades that relatively efficient observation systems for the purpose of describing the process of on-going verbal interaction have been constructed. It is now possible to capture a record of many kinds of interactive behaviors as they happen and in many cases to suggest explicit prescriptions for effective modification.

The primary purpose of this document is to provide information which those interested in the improvement of any aspect of learning and instruction can use; thus, the observation instruments described are from a wide variety of disciplines. By comparing the frameworks by which phenomena are observed by the anthropologist, psychologist, group dynamicist, psychiatrist, as well as those in specialized educational settings, "teachers" in any setting may be provided with insights about potentially new modes of behaving with learners.

"Teaching" has many meanings. The preacher is a teacher who focuses on affect; the lecturer on cognitive content (though it may be only opinions and narratives); the persuasive salesman uses both feelings and facts and he varies the dose with the deal, but the music teachers, "shop" teachers and therapists take a different tact; they "teach" by "guiding" the students' performances in a variety of ways. And for the administrator (or group leader) teaching can mean providing the interpersonal environment that optimizes the ability of his group to get the task done. We will have more to say about this at the end of Section One.

A great deal has been written lately about teaching techniques designed to help teachers engage in different types of classroom processes. Much of the literature about these classroom processes does not specify the teaching strategy necessary in order to be able to bring about desired outcomes. Often, this is because the tools for discussing the necessary teacher behaviors are not available, or not known about, by the curriculum authors. Thus the desired outcome for students is discussed, but the way to get there is not.

Before strategies can be specified, the kinds of teaching behaviors necessary must be known. The more teaching behaviors available, the wider the variety of strategies possible and the more diverse the expected pupil outputs can be.

We are living in an exciting period, for within the past ten years the potential for changing the traditional role of the teacher has been radically increased. The wealth of instruments, such as those in this anthology, provides a whole new pharmacology of behavioral resources which can be prescribed for a teacher. The traditional role of teacher is described by a well-known set of behaviors. Any school child playing "teacher" will reproduce most of the behaviors used by most teachers. Typical behaviors are: standing in the front of a group of relatively passive onlookers (a position of authority), doing most of the talking (telling), asking questions to which they already know the answers (testing), and evaluating by passing judgments. Yet, no research base indicates that these behaviors have payoff in terms of learning, and much indicates that they do not.

Systems Included

The observation systems in this anthology deal with many areas of communication. Some are specifically designed for special school settings. Others, however, like counseling and small group instrumentation deal with interactions whose focus is educative, but whose methodology would probably not be labeled as "teaching" even though very real and important learnings result. Strategies for inducing learnings, deduced from these "non-educational" systems, provide a source for new behaviors for teachers in the classroom.

The most widely used and best known of the observation systems are classroom systems. These meta-languages are used to describe what is happening where teaching and learning take place. When the place is the classroom, teaching behaviors are stable and predictable. The behaviors of various other "helping agents" (as described in this collection by "non-classroom" systems) reveal many additional potential modes of teaching rarely used in the classroom.

Of the ninety-nine systems in this document, seventy-eight are from the field of education and an additional four have been used in the classroom. Each of the systems from education has a specific, often unique focus, such as use in a laboratory setting, measurement of self-directed behaviors, and notations of the amount and kind of talk exhibited by different subsets of the classroom group.

These ninety-nine systems cover a wide range of phenomena including cognitive processes, affective processes, nonverbal behaviors, activities, interactions with materials, and sociological phenomena such as who is doing what to whom with what reaction. Each system in this anthology can be thought of as representing one or more sets of behaviors or roles.

Systems Excluded

The instruments included in this continuing anthology have been limited to those systems designed for measuring on-going human interaction. Many systems were regretfully excluded. Among these were spatial notation systems, content-analysis systems and zoological observation systems.

Philip Thiel (1961) developed a notation for the sequential experiencing of architectural and urban spaces. Of potential importance as content for the curriculum, and as a guide for the curriculum specialist, the system itself deals not with human-to-human interaction, but with spatial and location factors of the environment.

The series of systems commonly thought of as "content analysis" were also excluded. Content analysis counts the occurrences of certain words, phrases or punctuation. In some of the more sophisticated techniques, interrelationships between series of words or phrases are catalogued and analyzed. Excellent examples of content analysis systems are the ones developed by McClelland and his colleagues (McClelland, 1958) in their work on achievement, power, and affiliation motivation. Keys were designed to abstract various measures of

motivation from subjects' projective reactions to pictures so that scores could be assigned to the written reactions. Feedback is given to the learner about his own scores, and often the subject does his own scoring as part of a learning exercise. This information is then available to the learner as a yardstick to measure his own growth. The technology of providing a method for learning about oneself, in this case by scoring one's own written answers, is similar to the use of recorded observational data about one's own behavior for self-evaluation.

An example of a zoological observation system is that of Hediger (1955). This delightful work on animal behavior focuses on the psychomotor dimension and includes categories such as "bristling of mane," "clapping of beak," "ruffling of feathers" and "displaying of rump patch." As anyone who has faced an angry parent, teacher, boss or spouse can attest, these behaviors are related to the "warning signals" we humans use.

Kaufman and Rosenblum (1966, 1969) developed an exhaustive taxonomy of monkey behaviors that included social, sexual, infant-rearing, care-taking, emotional and object-related behaviors. This system consists of an extensive check-list using a Point-Time Sampling technique (discussed in the Number of Subjects Observed section). Bobbitt and Jensen (Bobbitt, Jensen, Gordon, 1964 and Bobbitt, et al., 1969) developed an observation system for recording the mother-infant behaviors in monkeys and their system was later adapted by Kogan and Wimberger (Kogan, Wimberger, Bobbitt, 1969 and Kogan and Wimberger, 1970) for studying human babies and their mothers.

Nonverbal observation systems, such as Kogan and Wimberger, dealing with movements of an infant or the relationship of the infant to his environment are also not represented here. Sometimes these systems describe the environment itself and environment usually means behaviors of the "mother" (see Table 1).

Table 1: SELECTED INFANT OBSERVATION SYSTEMS

AUTHOR	FOCUS
M. D. S. Ainsworth	Ratings of maternal care
M. D. S. Ainsworth, S. M. Bell and D. J. Stayton	Infant attachment to mother
B. Coates, E. P. Anderson and W. W. Hartup	Infant attachment behaviors
I. J. Gordon and R. E. Jester	Adult teaching strategies as stimuli for infant behavior
K. L. Kogan and H. C. Wimberger	Mother-infant interpersonal interaction
M. Lewis	Infant and mother interactive behaviors, particularly mother's response contingency
G. A. Morgan and H. N. Ricciuti	Infant's responses to strangers and facemasks
H. A. Moss and K. S. Robson	Mother-infant interaction
S. R. Tulkin and J. Kagan	Infant behaviors and mother response episodes

More recently, infant observation systems, such as Oswald and Peltzman (1974), are employing and coding from electroencephalographs, polygraphs and sound spectrograms.

A type of observation system which is sparsely represented in this collection is the preschool system.* Two or three decades ago, a considerable amount of work was done in development of observation systems for studying infants and young children (see Table 2).

In general, systems for observing young children focus on the individual child and his interactions with materials, with other children, and on the behavioral skills he exhibits. Many of these systems are rating scales and some are checklists (see Figure 2). More recently developed classroom-oriented systems tend to focus more on the teacher or on teacher-pupil interaction. They are concerned mainly with verbal behaviors and with the transmission of cognitive information.

Figure 2: THE FOCUS OF INFANT AND EARLY CHILDHOOD OBSERVATION SYSTEMS

1. The Individual Child:
   a. Amount of time by himself.
   b. What he is doing (daydreaming, playing, having a tantrum, etc.).
2. Social Contacts:
   a. Number of contacts with others.
   b. Amount of time with others.
   c. Quality of contact, usually in terms of a hostile-support dichotomy, both verbal and physical.
   d. Who is contacted.
3. Materials Used:
   a. Number of contacts with materials.
   b. Amount of time with materials.
   c. What materials.
   d. What the child is doing with the materials.

*For a summary of over six dozen such systems, see E. Gil Boyer, Anita Simon and Gail Karafin (eds.), *Measures of Maturation: An Anthology of Early Childhood Observation Systems*, Philadelphia, Humanizing Learning Program, Research for Better Schools, Inc., 1973.

For a comprehensive review of methodology and focus of infant and early childhood observation technology, see Herbert F. Wright, "Observation Child Study," *Handbook of Research Methods in Child Development* Paul H. Mussen (ed.), New York: John Wiley & Sons, Inc., 1960, pp. 71-139.

Table 2: SELECTED EARLY CHILDHOOD OBSERVATION SYSTEMS

AUTHOR	FOCUS
H. H. Anderson	Dominative and integrative behaviors of preschoolers
R. E. Arrington	Components of undirected activity: social, material, self
M. Barker	Child's spontaneous reactions to materials and people
H. L. Bee and A. P. Streissguth	Parent-child interaction; maternal teaching strategies; speech patterns
R. Q. Bell, G. M. Weller and M. F. Waldrop	Preschooler behavior and rating scales of maternal control and nurturance
L. E. Berk, P. W. Jackson and B. J. Wolfson	Environmental constraints of children in nursery school and their modes of adaption
E. Bing	Mother's ways of stimulating and helping child with tasks
R. L. Birdwhistell	Body movements and gestures
B. M. Bishop	Degree of contact, control, interference, facilitation and affect in adult-child interactions; parental behaviors as stimulus conditions for child's behaviors
N. G. Blurton Jones and G. M. Leach	Mother-child social interaction at separation and greeting
R. P. Boger and J. L. Cunningham	Peer-group interaction
M. E. Bonney	Social behavior
H. Borke	Children's verbalizations in non-directive play therapy
H. McM. Bott	Children's motor, verbal and social behaviors during free play
G. M. Bowman	Who talks to whom and kinds of communication
S. Brody and S. Axelrad	A typology of mothering
B. M. Caldwell and A. S. Honig	Computer grammar for coding behaviors which foster or inhibit child's psychological growth and development of cognitive processes
D. H. Cohen and V. Stern	An instrument for training adults to observe young children's behaviors that contains a framework of phenomena to observe
A. R. Coller	Student's activities in nursery school
K. Danziger and E. R. Greenglass	Mother-child interaction
H. C. Dawe	Quarrels of children
G. F. Ding	Activities associated with laughing and smiling of young children
A. J. Dinola, B. P. Kaminsky and A. E. Sternfeld	Assessment of children's performance levels on social, intellectual and physical activities
J. Dopyera	Influence of environment on preschoolers and how preschoolers use environment
E. Gellert	Power relationships of children: dominance, submission and resistance
F. L. Goodenough	Compliance and aggression
P. Greenberg	A training procedure for observing children's interpersonal relations and activities
W. W. Hartup and R. Charlesworth	Social reinforcement among preschoolers
G. Heathers	Development of emotional dependence and independence
L. M. Jack	Ascendance behavior, respect for property, and social behavior
A. T. Jersild and F. V. Markey	Conflict behaviors of children
J. Kagan	Maternal reactions to child's violation of standards

Table 2 (Continued)

AUTHOR	FOCUS
L. G. Katz	Child's orientation to nursery school cognitive behavior and classroom satisfaction
P. L. McGrew and W. C. McGrew	Child's social development; aggressive behavior
E. M. Manwell and I. G. Mengert	Play activities; psychological adjustment
R. H. Marshall and B. R. McCandless	Children's social behavior and participation; dependency on adults
E. J. Mash, L. Terdal and K. Anderson	Parent-child interaction; parent behavior as stimulus for child behavior and the reverse
D. M. Medley, et al	School experiences of children
C. E. Moustakas, I. Sigel and H. D. Schalock	Mother-child interaction in play settings
L. B. Murphy	Social behavior
D. Ogilvie and B. Shapiro	Social behavior
P. P. Olmstead	How mothers teach their children
W. C. Olson	Nervous habits of children
T. W. Parsons	Adult language style related to child language development
M. B. Parten	Leadership behaviors; social participation behaviors
A. F. Ricketts	Anger behavior of children
B. C. Rosen and R. D'Andrade	Parent-child interaction; parental reactions to child's achievement
E. S. Schaefer and M. R. Aaronson	Child's social, emotional and task-oriented behavior; child's perception of sibling
P. Schoggen	Environmental force units (EFU) or influences in child's environment
R. S. Schroeer and D. Flapan	Friendly and aggressive behaviors
R. R. Sears, L. Rau and R. Alpert	Children's dependency; prosocial and antisocial aggression; adult role taking behaviors; self-stimulation
R. R. Sears, L. Rau and R. Alpert	Fantasy during permissive and structural doll-play, expressions of conscience and of psychological identification in young children
E. Slater	Activities, play materials, words spoken, non-verbal contacts
R. S. Soar, R. M. Soar and M. Ragosta	Classroom climate and control
R. L. Spaulding	Pupil's classroom style
J. Stallings	Children's social interaction and activities
L. Stover, B. J. Guerney and M. O'Connell	Parent acceptance, allowing of self-direction, involvement, and empathy in adult-child interaction
C. Swan	Facial expressions of children
D. S. Thomas, et al	Movements, activities and social contacts
D. Van Alstyne	Play behavior of preschoolers
J. Walters, D. Pearce and L. Dahms	Affectional and aggressive behavior
R. W. Washburn	Child's activity patterns
J. C. Watts, et al	Mother-child interaction and child's interaction with materials
B. L. White and B. Kaban	Social and nonsocial task behavior
H. F. Wright	Social interactions in the child's world
L. Yarrow, et al	Preschooler's classroom experience

Note: See Bibliography for complete reference. The H. H. Anderson System and the Moustakas-Sigel-Schalock System appear in this anthology as numbers 6 and 62.

CATEGORIES – THE COMPONENTS OF OBSERVATION INSTRUMENTS

Optimally, observation systems represent sets of mutually exclusive, all-inclusive behaviors. That is, each observation system ideally has a category which represents every behavior that is observed, and each behavior fits into only one category. In practice, the systems generally fall short of this ideal in two ways: a category for every behavior observed is not available and most systems have some sort of miscellaneous category to pick up the refuse; and, many behaviors often seem to fall into two or more categories of the system, resulting in the necessity for long training periods for observers and considerably less than 100 percer reliability between coders using the system. As with the observation of any human phen nena, a delicate line must be drawn by the creators of systems between development of a very sophisticated system with a large number of categories that provides for fine distinctions and thus provides much information about what is happening, and a system with few categories which allows only gross distinction but is easier to learn to use. For example, a system with just two categories, "someone talking" and "no one talking" will be reliable, easy to learn, and will provide less information than one which divides the "talking" into types and the "non-talking" into activities occurring.

Most systems rest between these two extremes. Their authors select categories of conceptual importance to them, group them together along some theoretical dimension, and either code the behaviors which do not fit in a miscellaneous category or train observers to fit them into one of the existing categories by providing ground rules about them.

For convenience, we have grouped categories into seven classes:

Affective
Cognitive
Procedures, Routine or Control
Physical Environment
Psychomotor
Activity
Sociological Structure

Affective

A category is said to be an affective category if its primary focus is on the emotional component of communication, that is, if it takes into account some measure of expression of feelings or of the emotional overtone of some behavior. This class of category may be difficult to code from a written script if the "affective" aspect of the communication is carried in the voice tone or inflection, or in nonverbal behavior (see Table 3).

Although the term "affective domain" is becoming increasingly popular in educational literature, there is no general agreement in the field about what the parameters of the

Table 3: CATEGORY DIMENSIONS OF THE SYSTEMS

Systems 1 - 50	Affective	Cognitive	Procedure or Routine	Physical Environment *(material, equipment, etc.)*	Psychomotor *(body movement)*	Activity *(doing something)*	Sociological Structure *(role, who to whom, etc.)*	Other	
1 Adams-Biddle	●	●	●	●	●	●	●		1
2 Altman	●	●	●			●			2
3 Amidon (MCS)	●	●							3
4 Amidon-Hunter (VICS)	●								4
5 Anderson, A.	●	●					●		5
6 Anderson, H. H.	●		●						6
7 Anderson-Bingman (COMIC)	●	●							7
8 Argyris	●	●					●		8
9 Aschner-Gallagher		●	●			●			9
10 Bales	●	●	●		●		●		10
11 Balzer-Evans (BTBI)	●	●	●						11
12 Barnes	●	●	●						12
13 Bellack		●	●						13
14 Bemis-Luft-Liberty (SCIOS)	●				●				14
15 Blumberg	●								15
16 Borgatta (BSs)	●						●		16
17 Brophy-Good	●	●	●						17
18 Brown (TPOR)		●	●			●			18
19 Brown, et al. (FTCB)		●							19
20 Buehler-Richmond					●		●		20
21 Clements		●							21
22 C.E.R.L.I. (CVC)	●	●	●				●		22
23 Denny-Rusch-Ives (CCOS)	●	●				●			23
24 Dibner								●	24
25 Dodl	●	●							25
26 Flanders (FSIA)	●								26
27 Flanders (EXPANDED)	●	●				●	●		27
28 Fuller (FAIR 33)	●		●	●	●	●			28
29 Gallagher		●				●			29
30 Galloway	●				●				30
31 Hall					●		●		31
32 Heger (MINI TIA)	●								32
33 Herbert (SAL)	●	●		●	●	●	●	●	33
34 Hill (HIM)	●						●	●	34
35 Hoffman	●								35
36 Honigman (MACI)	●		●			●			36
37 Honigman-Stephens (SAP)		●		●		●			37
38 Hough	●					●			38
39 Hughes	●		●		●	●			39
40 Hunter	●	●		●					40
41 Jansen	●		●			●			41
42 Jason (MIOR)	●			●		●			42
43 Jecker-Maccoby-Breitrose					●				43
44 Jones (SACC)	●	●	●						44
45 Joyce	●	●	●						45
46 Kounin			●			●		●	46
47 Kowatrakul	●				●	●		●	47
48 Lindvall				●		●	●		48
49 Lipe-Steen-Quirk (PLAN-SOS)						●	●		49
50 Longabaugh (R-P)	●	●	●		●		●		50

Table 3: CATEGORY DIMENSIONS OF THE SYSTEMS

Systems 51 – 99	Affective	Cognitive	Procedure or Routine	Physical Environment *(material, equipment, etc.)*	Psychomotor *(body movement)*	Activity *(doing something)*	Sociological Structure *(role, who to whom, etc.)*	Other	
51 Macdonald-Zaret		●							51
52 Mann	●						●		52
53 Matthews-Teacher (SCAS)	●					●	●	●	53
54 Matthews-Student (SCAS)						●	●		54
55 Medley (OScAR 4V)	●	●	●						55
56 Melbin	●		●			●	●		56
57 McREL (MIA)	●	●	●						57
58 Miller	●	●							58
59 Mills (SPA)	●						●		59
60 Morsh	●	●			●	●			60
61 Moskowitz (FLint)	●								61
62 Moustakas-Sigel-Schalock	●		●		●	●	●		62
63 Munby		●							63
64 Ober (RCS)	●								64
65 Oliver-Shaver		●	●						65
66 Openshaw-Cyphert	●	●	●		●	●	●		66
67 Parakh (VPBCS)		●					●		67
68 Perkins-Teacher	●							●	68
69 Perkins-Student	●					●			69
70 Polansky-Lippitt-Redl	●		●				●		70
71 Porter	●		●						71
72 Puckett					●		●	●	72
73 Ribble-Schultz	●	●							73
74 Riskin	●						●		74
75 Roberson	●	●			●	●			75
76 Roberts	●	●							76
77 Schalock (T-R)	●	●	●	●	●	●	●		77
78 Schusler (CIMAR)	●	●	●	●		●	●		78
79 Shreble-Minnis (CLAIM)		●							79
80 Simon-Agazarian (SAVI)	●	●					●		80
81 Smith (Logic)		●							81
82 Smith (Strategies)		●							82
83 Snyder	●								83
84 Solomon (TIP)		●							84
85 Spaulding (CASES)	●				●	●			85
86 Spaulding (STARS)	●	●	●			●	●		86
87 Spaulding (TSC)	●				●	●	●		87
88 Steen-Quirk-Lipe (PLAN-TOS)	●		●			●	●		88
89 Steinzor	●	●					●		89
90 Stukat-Engstrom	●	●	●	●	●	●			90
91 Taba	●	●	●						91
92 Tyler	●	●						●	92
93 Waimon	●	●	●						93
94 Wallen, et al. (STEPOS)	●	●			●	●			94
95 Withall	●								95
96 Withall-Lewis-Newell	●	●							96
97 Wragg	●								97
98 Wright	●	●							98
99 Wright-Proctor	●	●				●			99
Total for 99 Systems	75	55	34	10	22	36	32	9	

"affective domain" are. Reports of work being done to analyze the complex components of affect are sparse. There is little work being done, either theoretically or educationally, in analyzing, understanding, or teaching about the more complex feelings like being in love, being anxious, and being "high."

Since affective states such as production of "alpha," being "high," being anxious and the powerful one of "being in love" appear to be learnable, a better understanding of how these states are learned and controlled should be a boon to most and may be even a necessity in our evolving culture.

Cognition itself is, in many important ways, inseparable from affect. The keys to memory are affective, both in the storage of impressions and in their recall. We remember most those events that have the greatest emotional impact on (or interest to) us. Highly emotional experiences are remembered the longest. Those experiences which have little emotional impact on us are "forgotten" almost immediately. This is probably why it is difficult to learn what we find disinteresting and easy to remember what we find exciting. Memory apparently travels along affective paths, thus feeling generates memory and conversely, memory of an event can regenerate the affect associated with that event. Because this appears so, the tie between affect and cognition can be, and is, often put to work.

Many therapists use this affect-memory-affect chain to help the patient extinguish "unproductive" emotions. Often people have strong feelings associated with things (or people) that are carry-overs from past traumatic events, for example, the woman who is afraid of kittens because she was frightened by a cat as a child. If the trauma of the past is healed, the inappropriate "here and now" feelings dissipate.

When the client triggers a strong (but unaccountable) emotion he is: a) encouraged to "ride that emotion" back through his memory to similar emotions, b) recall the events associated with it, c) discuss the remembered event and d) seek the "trigger" in the conversation that brought back the emotion without the memory. In this way, the therapist utilizes the client's here and now feelings as cues to recalling past traumatic events. Once the feelings are linked to the event which originally inspired them, and are mastered on that level, they no longer haunt the present.

Turn the process around. The "method actor" is trained to recall an event associated with the feelings he wants to produce. Many successful actors have some special cognitive cue they use to generate strong feelings, such as memory of a sad event to produce tears on cue.

The research done by McClelland and others* on the motivation and techniques of successful people indicates that a similar activity (that of arousing one's own feelings to help get a task done) is consciously undertaken by a large number of successful people. For

*Marian Chapman and Russell A. Hill (eds.), *Achievement Motivation: An Analysis of the Literature*, Philadelphia, Humanizing Learning Program, Research for Better Schools, Inc., 1972.

example, deliberately recalling the feelings associated with past successes, or imagining the satisfaction of reaching a desired goal, or thinking about surpassing one's own top achievement – all help inspire people to greater efforts. This is how successful people generate the emotional drive to excel.

There are two dimensions of the affective domain. One is *support-reject*, in which a person, *as a person*, is made to feel accepted or rejected. Categories in this dimension focus on "whole person" behaviors: asking or giving feelings, telling about the self, or supporting or rejecting another person (see Figure 3).

Figure 3: GENERALIZED CATEGORY SYSTEM
AFFECTIVE DOMAIN – SUPPORT DIMENSION*

SUPPORT ◀ – – – – – – – – – – – – – – – VERSUS – – – – – – – – – – – ▶ NON-SUPPORT	
Examples	Examples
Gives support (such that the receiver is not sorry he shared what he did)	Blames
Accepts feelings	Complains
Shares own, similar feelings	Attacks person
Expresses pleasure about what has just been said or done by others	One-ups (follows an expression of feelings with exaggerated or different expression of own feelings)

*May be coded from verbal and/or non-verbal behaviors.

The second dimension, "understanding versus judging," consists of categories which describe reactions to someone's idea. These categories describe whether a speaker is encouraging a previous speaker to clarify, expand, think through, or tell more about his ideas, or whether instead he is judging the ideas (see Figure 4).

Figure 4: GENERALIZED CATEGORY SYSTEM
AFFECTIVE DOMAIN – JUDGMENTAL DIMENSION

UNDERSTANDING ◀ – – – – – – – – – – VERSUS – – – – – – – – – – – – – – ▶ JUDGING	
Examples	Examples
Accepts idea	Positive evaluation ("good")
Clarifies understanding	Negative evaluation ("wrong")
Reflects or paraphrases ideas	Counter proposals, suggestions
Expands on someone else's idea	Implies judgments (should, should never, you always, everybody ought)

A common assumption is that a positive judgment (such as praise) is a facilitative behavior and a negative judgment is not. In this framework, positive and negative evaluations are not seen as opposites; they serve, in fact, exactly the same function – that of judging. And, even though the judgment (praise, for example) may, under some circumstances, make the recipient feel good as a person, it tends to focus attention *away* from the idea being processed and toward the judgment made.

An analysis of the affective categories of the classroom-oriented systems included suggests that there are four kinds of pupil verbal or nonverbal "outputs" or behaviors to which teachers react:

pupils' ideas or cognitive output
pupils' feelings or emotional output
pupils' attempts to manage classroom procedure and set standards
pupils' nonverbal behaviors

The affective domain assesses how the teacher reinforces the pupil and which of the four pupil outputs he or she chooses to emphasize.

Most of the classroom-oriented category systems have some generalized measure of teacher approval and disapproval. Many provide a way of determining if the teacher is accepting a student's feelings as contrasted with accepting his ideas, but generally rejection is not similarly differentiated. Only a few systems reflect concern for group process and for the development of student independence and/or have categories for measuring teacher responses to pupil nonverbal behaviors.

To the extent that the category systems in this volume reflect teacher behaviors which exist in the classrooms in America, there is considerable lack of emphasis on helping pupils to learn how to clarify and use their feelings constructively, to learn how to create efficient work procedures, or to evaluate their own work.

There has been considerable interest, but little speculation and even less research into a curious aspect of these instruments, that is why these measures of the teacher's *affective* response to pupil outputs appear to relate to subsequent pupil *cognitive* outputs such as achievement in subject matter and even rise in intelligence scores.

One reason why an affective behavior such as a teacher's acceptance of pupil's ideas may influence cognitive growth is because these affective measures deal with the reinforcement the child receives for his content handling skills. How the teacher responds to pupil cognitive output is what supplies the student with positive or negative reinforcement. If the student's idea (his thinking) is accepted by the teacher, the student is positively reinforced. If the teacher responds judgmentally, or in any way leaves the student in doubt, then the student is negatively reinforced, and his "learning" both of how to learn and what to learn may be impaired. In other words, the affective measures of the teacher's verbal reactions deal with the success or failure of the child to get positive feedback about the appropriateness of his

cognition. Affective systems deal in large part with the reinforcement climate in which the student exists. This may explain why the use of systems which deal with "warmth" or "judgment" (acceptance or rejection) of pupil output tend to relate to achievement.

Although there has been little research done on the effect of accepting pupil's feelings, theoretically teacher's use of this dimension is a potent predictor of pupil achievement. Every statement heard by the student will contain both an "information" message and an "emotional" message as well. For instance, a teacher statement like, "Even a kindergartner knows that Columbus discovered America" will tell a sixth grader who discovered America, but it will probably also tell him that the teacher thinks he is not very bright. For the student, the affective "You're not very bright" part of the message will probably override the data message "Columbus discovered America."

In a sufficiently threatening or ambiguous environment, it appears that the affective portion of the message can so negatively bias the climate that the content portion is not heard at all. How a pupil's feelings are handled sets this type of climate directly or indirectly and therefore his ability to deal with content is lessened. Negative or ambiguous reactions to pupils' (and other people's) feelings can be thought of as either limiting their ability to receive input or as negative reinforcement.

A somewhat similar phenomenon operates for classroom management which includes the setting of standards and work procedures. The manner in which a teacher reacts to pupils' efforts to control their own working environment can affect the learning climate.

Three possible reasons come to mind:

1. If the teacher consistently reserves the power to make decisions about procedures and standards, experience in decision-making is denied to the student. It is the denial of this kind of learning that makes it possible to teach democracy at the rote memory or word level while denying it in practice.

2. It is entirely possible that autocratic teacher behavior limits resources available because, in this type of classroom, the teacher is the only one who can legitimately provide inputs. Thus, to the extent that he limits student self-control, students not only lose the opportunity to practice behavioral (including cognitive) skills but also lose the considerable cognitive resources of their peers as well.

3. As children get older, response to their peers becomes stronger than response to the teacher. When the teacher reserves the power to set standards and procedures, he often puts himself at odds with the student-peer power structure, and loses his ability to influence the student. This is particularly apparent in the typical American junior high school.

In short, it appears that a positive emotional environment is a powerful asset to learning, and positive emotional environments are enhanced by teachers of all kinds whose reactions are supportive of their students' ideas, feelings, work control efforts and behaviors.

Cognitive

A category is said to be a cognitive category if its focus is on the intellectual component of the communication. Although over half of the systems in this collection deal with categories that are considered cognitive, the literature is vague about how precisely to classify a category as "cognitive" rather than "affective." In part, this may be an academic question. Every statement carries both a data message and an emotional message and in reality they probably are not separable. Although feelings (affect) appear to be different from ideas (cognition) the categories used to describe them overlap* (see Table 3, Column 2).

Cognitive systems deal with verbal behavior in two different ways. First, they note categories of verbal behavior such as giving data, asking for data, clarifying, defining and giving opinions and second, these systems attempt to get at some structured analysis of the thought processes themselves. To do this latter job, it is sometimes necessary to analyze a series of statements in order to determine what thought process is taking place.

Apparently, a thought process dimension is not easy to determine explicitly from any single verbal statement because a verbal category like "explaining" (Bellack, System 13), "stating" (Smith Logic, System 81) or "description" (Simon and Agazarian, System 80) could be describing a pupil's "recall" about some subject such as a date in history, or the name of a chemical compound, or it could instead be a part of an "analysis" statement in which the pupil was processing data. It could even be a part of an "evaluation" statement where the pupil was giving his reasons for some value judgment.

Because these cognitive systems appear to deal both with identification and modification of thought processes and with verbal categories for doing so, we have separated processes from categories as follows:

I. Cognitive Processes
   1. data recall
   2. data processing
   3. evaluation

II. Categories of Verbal Behaviors
   Used to Describe Teacher and Pupil Talk About Subject Matter

Data recall is the thinking process most widely solicited by teachers. This process has been made a separate dimension to differentiate it from the presumably more complex data processing dimension. The difference between these two dimensions can be made clearer by considering how a less complex mechanism, the computer, works. It is entirely possible to have a computer merely store data and, on command, dump (recall) it in the same form and

*It should be noted that nearly all systems which are primarily affective in their focus contain categories which differentiate between "broad" and "narrow" student talk. Although this is an indication of different types of cognition, such categories do not supply enough data to determine which dimension of thought processes is involved.

format in which it was stored. An impressively large amount of the "learning" which goes on in our schools is little more than this. That is, students are required to memorize sets of facts and to repeat these facts on command.

This seems to be materially different from storing data in a computer, programming the computer to process the data by sorting, comparing, doing arithmetical and logical operations and then reporting the data in some new form and order different from that in which the data was originally placed in the machine. This would be analogous to the data processing dimension in the cognitive domain and includes grouping, classifying, labeling, analyzing and so forth. Determining how best to teach students to use these types of thinking processes is one of the major potential uses of these cognitive systems.

Evaluation seems to be a sufficiently different enough thought process to be considered a cognitive dimension of its own. The evaluation dimension includes both opinions and judgments based on some criteria. The literature on teacher and pupil interaction, where judgments are being made, indicates that little classroom work in developing and stating criteria for evaluation is being done. Category systems with an evaluation dimension provide a tool to help analyze the process of formulating value judgments, and research in this area could help develop techniques for improving this process. Value judgments are always made by reference to some criteria, although the criteria may not always be stated. Often the criteria are unverbalized feelings about a subject. It appears that students make judgments quite frequently without any clear understanding of the criteria they are using to make those judgments.

The three main criteria used in making judgments are public, private and pragmatic.

Public criteria can be considered as the values and laws of the culture such as prudence, economy, justice and simplicity. They appear in the classroom in statements such as "Don't talk during assembly because the other pupils can't hear."

Private criteria are usually personal opinions or feelings and appear in such statements as "I don't allow gum chewing in my classroom because I think it rude."

Pragmatic criteria are really statements of probability such as "I think you had better study for your test, Johnny, because the other four times you didn't, you failed."

Quite often a statement carrying a value judgment or opinion appears without any criteria (the "because" part of the message is not given). These are frequently statements that start with "everybody ought" or "you should" without any reason being given for the statement.

It is interesting to note that in this sense, computers do evaluate, but, unlike people, are not usually programmed to give unsupported opinions. Their evaluation processing is usually based on probability and their output is usually the statistical probability of a given result for

a given action. For instance, a computer might be used to process complex data about the variables to be considered in determining a trajectory required to put a man on the moon. The output would be a recommended trajectory to do the job at a certain level of confidence. This confidence level would be the probability that the recommended trajectory would do the job.

This kind of "pragmatic evaluation" in which students are taught how to determine the probable consequences of a given act before they perform it does not appear to be common in our schools.

Figure 5 suggests a generalized category system for the cognitive domain along the dimensions discussed above.

Figure 5: GENERALIZED CATEGORY SYSTEM: COGNITIVE DOMAIN

I Cognitive Dimensions

1. DATA RECALL

2. DATA PROCESSING

- Enumerate, list, collect, read or report data
- Group, classify, synthesize
- Label, define
- Analyze, compare, contrast
- Infer, generalize, hypothesize

3. EVALUATION

- No criteria specified
- Private criteria specified
- Public criteria specified
- Pragmatic (probability) criteria specified

II Categories of Verbal Behavior Used to Describe Teacher and Pupil Talk about Subject Matter

- Stating
- Explaining
- Quoting
- Interpreting
- Elaborating
- Inferring
- Opining
- etc.

It usually takes more than one verbal statement to determine the cognitive dimension involved. In some cases, coding is a sufficiently complex process to require that both tape recordings and tapescripts of the classroom interaction be used for analysis. This is why very few of the cognitive systems can be coded "live" in the classroom.

If *how* a teacher says *what* he says has an impact on pupil learning as measured by the affective systems, then how a teacher asks for or gives data should also make a difference. A teacher who only asks for data recall should have a different impact on students than one who encourages students to process data in a variety of ways. The differences should show up in the decision-making skills of the students. Students who have been encouraged to develop opinions and value judgments based on pragmatic criteria, students who have been encouraged to recognize value judgments based on their own private criteria and students who are given only public criteria for problem solving should be very different from each other. As yet, this hypothesis remains largely untested. Very little research has been done in teaching problem-solving techniques to pupils or in teaching pupils various ways of making value judgments as a basis for making decisions.

The definition of the very concept of cognition is still being debated. Cognitive and experimental psychologists are typically reticent about publishing theories and models of human intellectual behavior. They believe, with good reason, that the scope and variability of intellectual processes cannot be adequately accounted for by any small set of psychological constructs. Attempts at defining such a global theory have met with disdain and with verification difficulties. Models of the intellect tend to be constructed for specific psychometric, educational or clinical purposes. Despite apparent similarities or contradictions, these models cannot be considered to be theoretical alternatives and must be treated only as heuristic devices with which the psychologist, clinician or educator seeks to organize research findings or further his own research ends.

Following is a sampling of some of these models,* each of which has potential for translation into an observation system to both test the validity of the model and to provide a potentially useful way of describing pupil cognition.

A Task Analysis Model: Classification of cognitive processes can have an empirical base. Psychologists using this technique are interested in defining the total number of discrete performances necessary to carry out a particular task or set of tasks.

For Gagne (see Figure 6), learning a simple stimulus-response chain is not only easier than learning to solve a problem, but also the conditions under which the learning occurs, the nature of the response, and the internal conditions of the learner are necessarily different in each case. The following summary is from Gagne.

*This section adapted with permission of the author from John Thomas, *Varieties of Cognitive Skills: Taxonomies and Models of the Intellect*, Philadelphia, Humanizing Learning Program, Research for Better Schools, Inc., 1972.

Figure 6: GAGNE'S ESSENTIAL CONDITIONS APPROPRIATE FOR EACH TYPE OF LEARNING

Learning Type	Prerequisite Capability	External Conditions of Learning
Ss→ R Connection	Apprehension of stimulus	Presentation of stimulus so that desired response will be contiguous in time and supply contingent reinforcement.
Motor Chain	Individual connections	A sequence of external cues, stimulating a sequence of specific responses contiguous in time; repetition for selection of correct response-produced stimuli.
Verbal Chain	Individual connections including "coding" links	A sequence of external verbal cues, stimulating a sequence of verbal responses contiguous in time; repetition may be necessary to reduce interference.
Discrimination	Apprehension of stimulus	Practice providing contrast of correct and incorrect stimuli; or, practice providing progressive reduction in stimulus differences.
Concrete Concept	Discriminations	Responding to a variety of stimuli differing in appearance, belonging to a single class.
Rule, including Defined Concepts	Concepts	External cues, usually verbal, stimulate the formation of component concepts contiguously in a proper sequence; application is made in specific examples.
Higher-Order Rule —Problem Solving	Rules	Self-arousal and selection of previously learned rules to achieve a novel combination.

Gagne (1970)

This model could contribute to the design of each portion of a cognitive curriculum insofar as it specifies the kind of prerequisite learnings necessary and the instructional conditions which would maximize transfer to the criterion tasks.

A Developmental Model: Cognitive-developmental research can hardly be ignored in any discussion of models of cognition.

Piaget has been influential in the growth of a new breed of psychologists interested in human thought processes, intelligence and problem solving. The unique aspect of this approach is best understood and defined via an analysis of the developmental sequence through which it emerges.

The characteristics listed on the chart below, which elsewhere are considered to be cognitive skills, problem-solving processes, human abilities, etc., are, for Piaget, attributes of cognitive adaptation – of the successful attainment of stages of intellectual development. The following chart is taken from an article by Williams.

Figure 7: PIAGET'S SCALE OF COGNITIVE DEVELOPMENT

AGE	STAGE	OPERATIONS
birth to 2	SENSORI-MOTOR STAGE	Mute – no use of verbal symbols Learns to perceive – discriminate and identify objects
2 to 7	PRE-OPERATIONAL STAGE	Symbols and representations Acts on perceptive impulses Static-irreversible thinking
7 to 11	CONCRETE OPERATIONS STAGE	Analyzing Conscious of dynamic variables Classifies things in groups or series
11 – on	FORMAL OPERATIONS STAGE	Abstract-conceptual thinking Reasoning generalized; Evaluation; Hypothesizing; Imagining; Synthesizing

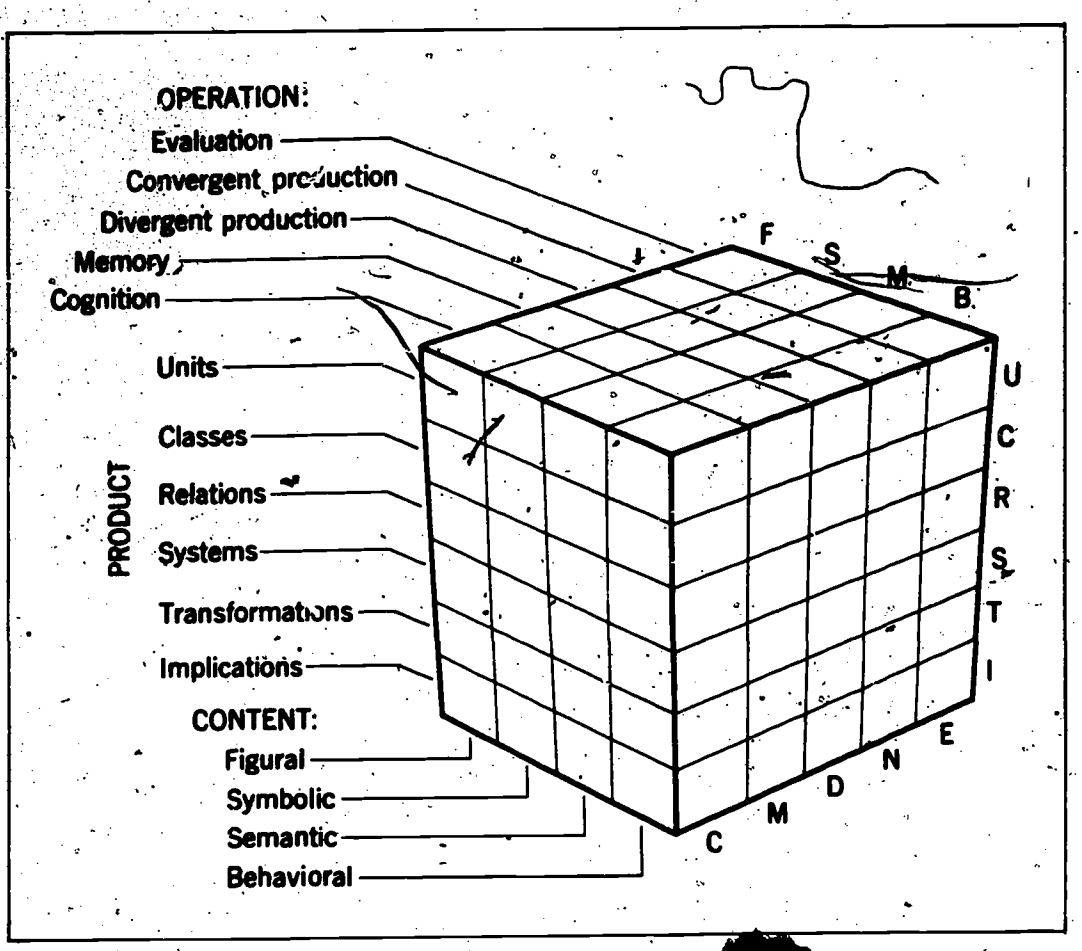
Williams (1969)

A Psychometric Model: Guilford's "structure of the intellect" model has provided an empirical referent for criticisms of existing IQ measures and has been used by educators, especially, to champion the creative processes against the convergent thinking processes allegedly tapped by intelligence and achievement measures. The model is a psychometic one. Intercorrelations between performance data on a variety of ability tests were manipulated through statistical techniques such that factors were caused to emerge. These factors appeared to be along three major dimensions. Guilford and his associates then introduced ability tests into the analysis in the attempt to define pure measures of independent factors which could be arranged along the intersections of the three dimensions of intelligence (see Figure 8).

Without a doubt, the most pervading aspect of the model is that it includes a dichotomy of sorts between convergent and divergent production; between creativity and the more constrained, typical academic thinking activities and can be found in cognitive systems like Aschner-Gallagher (9).

The creativity (divergent thinking) vs. intelligence (convergent thinking) controversy may serve to illustrate the utility of Guilford's model for education. Criticisms of its validity and its predictive significance not withstanding, the model should serve to promote more varied and multidimensional conceptions of educational objectives.

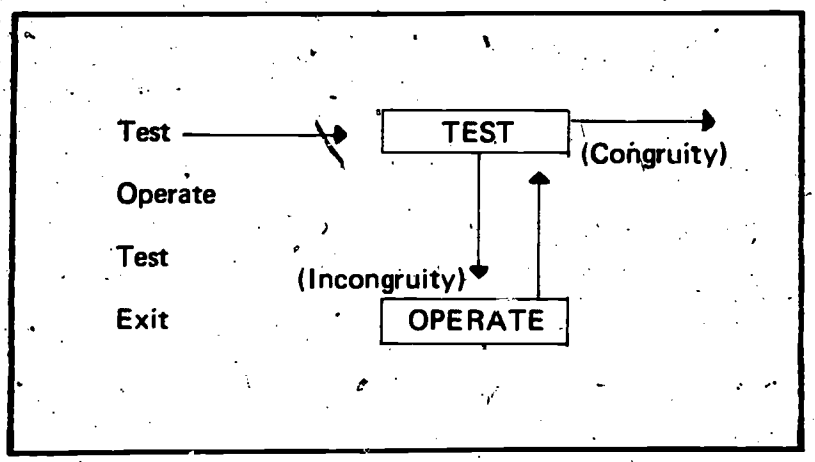
Figure 8: GUILFORD'S STRUCTURE OF INTELLECT MODEL



Guilford (1967)

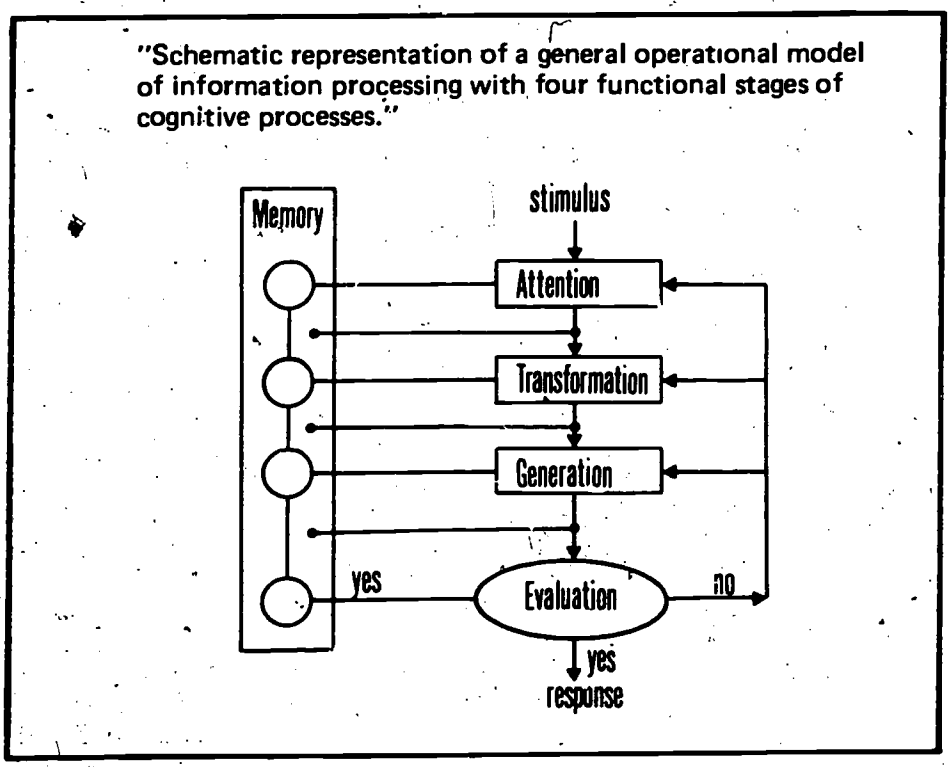
Information-Processing Models: In an attempt to simulate the operation of the human mind by studying and adapting the computer, psychologists have promised both a fuller understanding of the human brain and a more efficient means of teaching problem solving. Two such models appear as Figures 9 and 10.

Figure 9: MILLER, GALANTER, AND PRIBRAM'S TEST OPERATE TEST EXIT (TOTE) UNIT



Miller, Galanter and Pribram (1960)

Figure 10: THE MIND AS A COMPUTER



Fletcher (1969)

A Taxonomy of Cognitive Objectives: Another model based upon task analysis is Bloom's "taxonomy of educational objectives" of the cognitive domain (1956). Rather than being a classification of the variety of learning paradigms it is a taxonomy of the variety of educational objectives. Consequently, it spans learning tasks and the more abstract goals of instruction that have to do with thinking about the content of learning tasks.

Bloom's model is a descriptive one. Whatever hierarchical qualities are attributed to it by Bloom and others are logical and not psychological. In contrast to Guilford's model, Bloom's taxonomy is sufficiently general to create difficulties in interpretation, yet it has proven to be quite useful as a classroom observation scheme. We found it a useful way to deal with cognitive systems and adapted the cognitive portion of the Generalized Category System (see Figure 11) from this taxonomy.

Theoretically, at least, it seems reasonable to propose that teacher behaviors can be modified to elicit more efficient and effective thought processing or thinking skills from students. Further, it seems reasonable to assume that teacher verbal behavior carries as a part of its content "prescriptions" for how to think. This is true whether or not the teacher is explicitly aware of the "prescription" he is giving. A teacher who asks only data recall questions is prescribing a different thought process than one who asks questions requiring pupils to process data. These prescriptions are the "what" of teaching children how to learn. It is possible that these approaches to how to learn are more important than any reordering or restructuring of the curriculum in the classic sense.

In our present culture where new knowledge is being generated at an exponential rate, and where data are becoming obsolete before they can be processed, skills in how to acquire data and how to process data into useful information are rapidly becoming far more important than the "stockpiling" of facts. If today's schools are to prepare today's children for tomorrow's world, they can ill afford to attempt it by only teaching children how to recall yesterday's data.

The Affect in Cognition: Although cognitive categories can and do differentiate between different levels of thought processes, it appears that a meaningful description of interaction on a cognitive level requires a description of the affective climate in which cognition is occurring.

Both the cognitive and affective domains contain an "evaluative" dimension and this reflects the dominance of these behaviors in our culture where evaluative statements are almost always more common than data-sharing statements. (A notable exception is the therapist's office.) The following comments discuss the function of evaluation in some detail.

Evaluation always carries the potential for arousing strong negative feelings in people. An evaluative statement can be interpreted by a listener as a statement about him. For example, the comment "I think green chairs are better than red chairs" just after someone has said "I like red chairs" can be heard either as a statement about the second speaker's own color preference or about the first speaker's taste in chairs, or both.

Figure 11: COGNITIVE PROCESSES

Generalized Category System*	Taxonomy of Educational Objectives**
Low Order Cognitive	*Knowledge*
1. Data Recall	1.00 Knowledge 1.10 Knowledge of Specifics 1.20 Knowledge of Ways and Means of Dealing with Specifics 1.30 Knowledge of the Universals and Abstractions in a Field
Higher Order Cognitive	*Intellectual Abilities and Skills*
Data Organization Processes 2. Data Processing Read or Report Data Collect Enumerate, List Group, Classify Label Analyze, Compare, Contrast Synthesize Infer, Generalize, Hypothesize	2.00 Comprehension 2.10 Translation 2.20 Interpretation 2.30 Extrapolation 3.00 Application 4.00 Analysis 4.10 Analysis of Elements 4.20 Analysis of Relationships 4.30 Analysis of Organizational Principles 5.00 Synthesis 5.10 Production of a Unique Communication 5.20 Production of a Plan, or Proposed Set of Operations 5.30 Derivation of a Set of Abstract Relations
Evaluation Processes 3. Evaluation Personal Criteria Social Criteria Pragmatic (probability) Criteria	6.00 Evaluation 6.10 Judgments in Terms of Internal Evidence 6.20 Judgments in Terms of External Criteria

* Simon and Boyer (1967)
** Bloom (1956)

How much affect is generated by an evaluative comment is a function both of the perception of the listener and of the behaviors used by the speaker. Speakers cannot easily control the perception of listeners, but they can control to some degree their own behaviors and can learn to use the kinds of behaviors which tend to minimize the negative affective impact of evaluative statements.

Contrary to common belief, evaluative statements are not statements about objects being evaluated. They are statements which express the reactions of the evaluator to what he is evaluating. For example, "Modern music is a bore" is a statement revealing the opinion of the speaker; it tells nothing about modern music.

There are "evaluation-like" statements that actually sound as if they carry information but actually carry no information at all, either about the person making the statement or about what he is evaluating. For instance, the statement "That is a pretty hat" sounds at first like information about a hat. It represents what we are calling an "incomplete" evaluative statement, that is, it gives neither information about the hat nor explicit information about the evaluator's reaction to the hat.

What "incomplete" evaluation statements do is to act as cues from which inferences are drawn by the listener. A crucial factor here is that the listener is left but two choices: either to ask for clarification or to draw inferences (conscious or otherwise) such as "He likes my hat," or "He likes me," or "He wants something," or "He didn't like the hat I had on yesterday." When the evaluator is in a position of power, the choice to ask for clarification is not always available.

A similar, but "complete" evaluative statement would be "I like that hat" which (in the nature of evaluative statements) still tells nothing about the hat, but does give explicit information about the evaluator's opinion.

Unfortunately, evaluations are often stated as, and usually heard as, data about what is being evaluated. Supervisory comments such as "He is a good teacher" are treated as data about the teacher and not as information about the evaluator. The consequences are that subordinates quickly learn that the road to success is "give-em-what-they-want" with attendant lack of morale, independence and creativity. And, since evaluative behaviors seem to breed more evaluative behaviors, they quickly set the norm in any interaction, a norm which is difficult to break.

This is not to say that evaluation is always inappropriate. Evaluative behaviors are very appropriate at times, for example, during the stage of problem solving in which previously collected ideas are being analyzed. It is to say, however, that evaluative comments have some predictable effects, among them the focusing away from continued data processing and toward either defense of oneself or one's ideas, reformulation of what has just been said, or counter evaluation.

Since judgments do distract attention from content being explored, industrial "brainstorming" and "problem-solving" sessions of many types are constructed specifically to avoid evaluation. These require that during the "creativity" part of the sessions, evaluative statements of all kinds (positive and negative) be withheld. This knowledge about the effects of affect on cognitive processes is essential for teachers and administrators working to encourage creative and other higher-order cognitive behaviors in pupils and employees.

Procedure or Routine

These categories focus on what is being talked about. The content of the categories seems to be of three general kinds for the classroom systems and three parallel kinds for the non-classroom systems (see Table 3, Column 3).

For the classroom systems the foci of Procedure or Routine Categories are:

1. "getting ready to work" categories that include statements about working procedures (papers to use, books to read, techniques to be employed) and statements about behavioral boundaries (what is acceptable behavior, discipline to be imposed, limitations on activities);
2. "working on the content" categories which usually deal with statements about specifically assigned subject matter. (The use of these kinds of categories is not reported in Table 3.); and
3. "administrative routine" categories and other "non-work" content of the sort that plagues most teachers, including roll call, collecting milk money and the like.

Often, classroom observation systems will simply differentiate these Procedure or Routine Categories into two gross sets, "lesson related" and "lesson non-related."

In the non-classroom systems, such as counseling, group dynamics and industrial observation systems, a somewhat parallel series appears. The foci of Procedure or Routine Categories in non-classroom systems are:

1. "process talk" categories which deal with statements about what is happening now and what is supposed to be happening, statements about the setting of work norms or group norms and statements that deal with getting ready to do the work;
2. "work-on-the-content" categories for the non-classroom setting systems which cover a rather broad range since these systems can vary greatly in what they mean by "work" (the "business" of a business group, therapy material for psychotherapy groups, and, for the T-group, work can be almost anything which the group has come together to work upon, including the "process" of how to work); and
3. "non-work content" categories which deal with statements of content that focus neither on "the job" nor on "getting ready to work." For example, for the business meeting environment, almost any comment

that is not a cognitive statement related to the explicit purpose of the meeting would fall here. By contrast, any comment of a therapist's patient is almost always considered work and virtually nothing would fall into the "non-work" set of categories.

Thirty-four of the ninety-nine systems have categories to deal with "content."

Physical Environment

These categories describe the physical space in which the observation is taking place and note specific materials or equipment being used. In the more common, perhaps "classic," classroom, the teacher is considered the primary instrument of instruction, and many of the classroom systems have been designed so that when neither the teacher nor the students are talking, the coding stops as well. This is particularly true for those systems of the Withall-Flanders lineage (see Table 3, Column 4).

Experimentation with various types of teacher surrogates has been increasing. Notable examples are Computer Assisted Instruction (utilizing the computer), Individually Prescribed Instruction (utilizing programmed instruction), "Discovery and Inquiry" technology (utilizing feedback from student-conducted experiments), and a multitude of media-lecturer surrogates (such as audio tapes, video tapes, motion pictures and television).

With the increasing use of non-teacher "inputs" to students, student interactions with materials and machines are becoming of greater concern to the observer of the classroom scene. Ten of the systems in this collection have categories which note these kinds of interaction. These include categories to note different kinds of environmental settings in which activities are taking place.

Psychomotor

A category is said to be psychomotor if the focus is the description of behaviors by which people communicate when they are not using words, for example, posture, position in relation to others, facial expressions, gestures and so forth. In order to code psychomotor categories no words are required, but pictures or visual representations of behaviors are necessary (see Table 3, Column 5).

With the use of any categories in a system, ground rules are created to resolve category distinctions when categories are not mutually exclusive. This is also necessary for classes of categories. In the case of the psychomotor categories we have reserved this class to mean body movements that can be related to the person himself, that is, how he changes the position of his body (for example, putting a hand in the air, crossing his legs and so forth). Thus, this class includes categories such as walking, running, or sitting. Body movements which are related to someone or something else (such as hitting, picking up something, or looking at something) are considered "activity" categories and are excluded from the psychomotor set.

Twenty-two of the systems have some form of psychomotor category and two of these, Buehler-Richmond (20) and Hall (31) are composed primarily of psychomotor categories.

Sociological Structure

A category is said to deal with sociological structure if it supplies a means to determine who is talking to whom, if it designates the role of the person or persons, if it notes the number of people interacting or provides information about vital statistics of those interacting such as gender, race, age and so forth (see Table 3, Column 7).

For many classroom-focused systems, there is no specific "sociological structure" category such as "teacher talks." Instead the information about whether the speaker is a teacher or pupil is built into the categories themselves. For example, a "2" code in the Flanders system (26) means not only that the behavior used is "praise," but that the speaker using the praise behavior is a teacher and not a student. The categories in the sociological structure dimension are explicit notations of who-to-whom, role and so forth. In order to code these kinds of categories no words are required but some visual representation of what is going on (and often an audio tie to the visual representation) is necessary in order to differentiate speaker from audience. Thus, these categories are either coded live or require an audio-visual tape record. Nearly a third of the systems represented here have at least one category that falls into this class.

Activity

An activity category focuses on recording the activities in which people are engaged, for example, reading, looking at films, hitting someone or something. Most of the systems used to measure infant and small child behavior are activity systems. In order to code the activity categories no words are required, but pictures or visual representations of behaviors are necessary (see Table 3, Column 6).

Over one-third of the systems have activity categories in combination with some other class of categories. These systems, with the exception of Moustakas-Sigel-Schalock (62) and Melbin (56), are classroom systems.

Other

Nine of the systems have categories embedded within them that do not conveniently fall into any of the preceding classes. For example, the Dibner system (24) codes types of speech patterns used by patients in therapy sessions. The Tyler system (92) has categories which differentiate types of psychoanalytic interpretations. These require a judgment on the part of the coder and relate to predetermined psychoanalytic constructs for the derivation of the categories. The Hill system (34), on the other hand, has five categories for therapists' work styles (responsive, conventional, assertive, speculative, and confrontive) that he relates to four

types of content to form a twenty cell, 4 x 5 matrix of categories. The Perkins system (68) has categories that deal with teacher role, such as leader-director, resource person, socialization agent. The Herbert system (33) notes type of lesson form and format (including audio-visual equipment in some detail). The Kowatrakul system (47) notes subject matter area. Kounin (46) notes the spatial relationships of children to teachers and Matthews (53) notes only size of the pupil groups responded to. Puckett (72), an early system, catalogs types of pupil participation.

CODING AND PROCESSING – THE TECHNOLOGY OF OBSERVATION INSTRUMENTS

Because observation systems cover a wide variety of interests, how they are organized and used varies. People have been observing other people since time began but it is only recently that "people watching" has become a technical skill struggling to become a science.

Coding Units

There are over half a dozen varieties of coding units (see Table 4). The majority of systems use specific predetermined categories such as those discussed earlier as the unit which is coded. These are units such as "teacher asks question," "pupil gives narrow answer," "patient frowns," and "person leaves room." Usually an alphanumeric or mnemonic code is assigned to each category and these codes are what is recorded. Many of these same systems also use a time unit. This is particularly true of the systems in the Flanders lineage that use a several-second time interval so that the codes recorded carry with them not just notations of category changes but some sense of elapsed time as well. In these systems a category that continues for some length of time (such as "lecture") would have the code designation for "lecture" repeated for every time unit that passed. It is this combined "category change/time unit" notation that has made possible the collection of research data about the sequential nature of amount and kinds of verbal transactions that go on in classrooms.

Some of the systems which use the same categories to code the behaviors of all participants add an additional set of categories to note who is speaking, or, at least to note that the speaker has changed. A change in speaker (and sometimes in audience) is often the cue for a new coding unit.

Four of the systems, Adams-Biddle (1), H. H. Anderson (6), Openshaw-Cyphert (66) and Schusler (78), have coding units that note a change in the "target," that is, a change in the audience rather than the speaker. For example, a teacher speaks first to a small group and then to the whole class.

Some few systems have special codes that note a change in topic or content even though neither the speaker nor the behavior he is using has changed (that is, the speaker may continue to "lecture" or "give an opinion" but on two different topics). Coding of topics is characteristic of some of the cognitive systems. The two language systems, Moskowitz (61) and Wragg (97), are special adaptations of the Flanders system and are used in classrooms dealing with the study of foreign languages. These employ a category designation technique for determining which language is being used. Two systems, Macdonald-Zaret (51) and Medley (55), have a compound coding unit which is composed of a question, answer and response as a single unit.

Table 4: CODING UNITS AND COLLECTION METHODS

Systems 1 – 50	Coding Units Used							Collection Methods			
	Category Change	Time Unit	Topic or Content Change	Speaker Change	Time Sample	Audience Change	Question/Answer Response Unit	Video and/or Audio Equipment: Not Required	Video and/or Audio Equipment: Required	More than one observer or coder needed	
1 Adams-Biddle		●		●		●			●	●	1
2 Altman					●				●		2
3 Amidon (MCS)	●	●						●			3
4 Amidon-Hunter (VICS)	●	●						●			4
5 Anderson, A.	●	●		●				●			5
6 Anderson, H. H.	●					●		●			6
7 Anderson-Bingman (COMIC)		●						●			7
8 Argyris	●			●				●			8
9 Aschner-Gallagher	●			●					●	●	9
10 Bales	●			●	●			●			10
11 Balzer-Evans (BTBI)	●	●							●		11
12 Barnes					●				●		12
13 Bellack	●			●					●	●	13
14 Bemis-Luft-Liberty (SCIOS)					●			●			14
15 Blumberg	●	●						●			15
16 Borgatta (BSs)	●	●		●				●			16
17 Brophy-Good	●		●	●				●			17
18 Brown (TPOR)					●			●			18
19 Brown, et al. (FTCB)					●			●			19
20 Bushler-Richmond					●			●			20
21 Clements	●								●		21
22 C.E.R.L.I. (CVC)	●	●		●				●			22
23 Denny-Rusch-Ives (CCOS)	●				●			●			23
24 Dibner	●								●		24
25 Dodl	●	●						●			25
26 Flanders (FSIA)	●	●						●			26
27 Flanders (EXPANDED)	●	●						●			27
28 Fuller (FAIR 33)	●	●		●				★			28
29 Gallagher			●						●	●	29
30 Galloway	●	●						●			30
31 Hall					●			●			31
32 Heger (MINI TIA)	●	●						●			32
33 Herbert (SAL)	●								●		33
34 Hill (HIM)	●		●	●				●			34
35 Hoffman	●		●	●				●			35
36 Honigman (MACI)	●	●						●			36
37 Honigman-Stephens (SAP)					●			●			37
38 Hough	●	●						●			38
39 Hughes	●								●	●	39
40 Hunter	●	●		●				●			40
41 Jansen					●			●			41
42 Jason (MIOR)	●				●			●			42
43 Jecker-Maccoby-Breitrose					●				●		43
44 Jones (SACC)	●	●		●				●			44
45 Joyce	●	●						●			45
46 Kounin		●							●		46
47 Kowatrakul					●			●			47
48 Lindvall					●			●			48
49 Lipe-Steen-Quirk (PLAN-SOS)		●						●			49
50 Longabaugh (R-V)	●			●				●			50

Table 4: CODING UNITS AND COLLECTION METHODS

Systems 51 - 99	Coding Units Used							Collection Methods			
	Category Change	Time Unit	Topic or Content Change	Speaker Change	Time Sample	Audience Change	Question/Answer Response Unit	Video and/or Audio Equipment: Not Required	Video and/or Audio Equipment: Required	More than one observer or coder needed	
51 Macdonald-Zaret	●			●			●		●		51
52 Mann	●			●					●		52
53 Matthews-Teacher (SCAS)	●	●						●			53
54 Matthews-Student (SCAS)	●	●						●			54
55 Medley (OScAR 4V)	●			●			●	●			55
56 Melbin	●	●		●				●			56
57 McREL (MIA)	●	●							●		57
58 Miller	●								●		58
59 Mills (SPA)	●			●					●		59
60 Morsh					●			●			60
61 Moskowitz (FLint)	▲	●						●			61
62 Moustakas-Sigel-Schalock	●	●		●				●			62
63 Munby	●								●		63
64 Ober (RCS)	●	●		●				●			64
65 Oliver-Shaver			●		●				●		65
66 Openshaw-Cyphert	●	●				●		●		●	66
67 Parakh (VPBCS)	●	●		●				●			67
68 Perkins-Teacher	●				●			★			68
69 Perkins-Student	●				●			★			69
70 Polansky-Lippitt-Redl	●			●				●			70
71 Porter	●								●		71
72 Puckett	●			●				●			72
73 Ribble-Schultz	●			●				●			73
74 Riskin			●		●				●	●	74
75 Roberson					●				●		75
76 Roberts	●								●		76
77 Schalock (T-R)	●	●						●			77
78 Schusler (CIMAR)	●			●		●		●			78
79 Shrable-Minnis (CLAIM)	●	●		●					●		79
80 Simon-Agazarian (SAVI)	●	●		●				●			80
81 Smith (Logic)			●						●	●	81
82 Smith (Strategies)			●						●	●	82
83 Snyder	●			●					●		83
84 Solomon (TIP)					●			●			84
85 Spaulding (CASES)					●			●			85
86 Spaulding (STARS)					●			●			86
87 Spaulding (TSC)					●			●	●		87
88 Steen-Quirk-Lipe (PLAN-TOS)		●						●			88
89 Steinzor	●								●		89
90 Stukat-Engstrom		●							●		90
91 Taba			●						●		91
92 Tyler	●			●					●		92
93 Waimon	●			●				●			93
94 Wallen, et al. (STEPOS)					●			●			94
95 Withall	●							●			95
96 Withall-Lewis-Newell	●	●						●			96
97 Wragg	▲	●						●			97
98 Wright	●							●			98
99 Wright-Proctor	●							●			99
Total for 99 Systems	68	38	9	32	26	4	2	67	33	9	

▲ Language Change

★ Special Coding Equipment Used

The twenty-six systems that use a time sample employ a somewhat different approach. Instead of coding behaviors sequentially, some unit of time (such as 10 seconds, or 2 minutes) is specified. To use these systems, the observer watches for the time specified and then, usually onto some check sheet, notes the various categories of behavior that have taken place during that span of time. This type of static sampling provides a snapshot of all the behaviors occurring in a specified time interval. In contrast, time-unit systems provide a dynamic, sequential picture of the activities.

A few instruments employ coding units other than the ones described above. Included are: episodes (a complete interchange between two people), a complete verbalized thought (usually defined in grammatical terms such as a phrase or sentence), occurrence of a specific incident which is the focus of the author's interest (such as a quarrel between two children).

Rating scales which are not actually a category system coding unit also occur. Category system units are used to count or at least note the occurrence of some observable behavior. In one way or another, they note what is happening during the observation period. Rating scales are not used to count behavioral acts, but rather are used as guides to making judgments about a subject. Scales vary from vague indicators of the amount of something (some, few, several, many) or judgments of quality (poor, fair, good, excellent) to hierarchically arranged items that are behaviorally defined (child talks: not at all, seldom, occasionally constantly). Subjectivity appears to be reduced as the behavior descriptors become more explicit. Scales are particularly useful in recording maturationally related events. (See Jansen (41), Jecker-Maccoby-Breitrose (43), and Riskin (74).

The classifications described (see Figure 12) are not mutually exclusive. Depending on the nature of the data required in the study, much variation can occur by combining two or more methods for the coding unit.

Figure 13 is a sample dialogue using a mythical category system. As it stands there, the "codable activity" represents a combination time unit/category change system where every behavior change is coded and every behavior occurring on the time unit mark (in this case five seconds) is also coded. Thus, all behaviors, the sequence of behaviors and the duration of behaviors are maintained, but the speed of coding required could make training for reliability difficult.

Collection Methods

With today's available audio- and video-tape technology virtually all of these systems can be coded from recorded inputs instead of using a live, on-the-scene observer/coder (see Table 4). For two of them, however, using recorded data modifies the use of the system:

> For the Melbin system (56), the system was designed to allow the observer to code while being part of the interaction in a "natural" setting. This type of line system is particularly useful on those occasions when making a tape of the interaction (for later coding) would be disruptive of the on-going work of the organization.

For the Hall proxemic system (31), if even the best audio-video tape were used as a data source, some of the category dimensions would have to be dropped. These categories measure smell, touch, and heat radiation which could not easily be inferred from audio or visual cues.

The Blumberg system (15) – which, according to Table 4, can be coded live – if being used for "self-improvement," would require recording one's own behavior for later self-coding.

One-third of the systems require coding from some form of recorded observation and cannot, according to their authors, be used as "live" systems. Nine of these systems require more than one person to code them and one of them, Adams and Biddle (1), requires two equipment operators.

The Matthews - Student system (54), which utilizes a point-time sample, requires one observer per six students to record their activities. For a classroom where the behaviors of more than six students are to be recorded, additional personnel would be required.

Three systems, although they are recorded live, are so designed that the observer/coder uses mechanical coding equipment as an aid for recording the coding in the classroom. They are the Fuller (28), Perkins - Teacher (68) and Perkins - Student (69) systems.

Collecting observation data for later analysis has been greatly aided by electronics. Few observers tried verbatim recording before the advent of the tape recorder. Rommiett Stevens (who never developed an actual system) employed court stenographers to make verbatim transcriptions of New York City classrooms in 1911. Porter (71) was one of the earlier (early 1940s – pre-tape recorders) users of electronic devices and he recorded therapy sessions by cutting plastic discs whose mechanics were not so very different from Edison's original invention.

Number of Subjects Observed

Systems vary in their ability to handle the number of subjects being observed at one time and, at least for some systems, the number is dependent upon the populations for which the system is being used (see Table 5).

Some systems can be used to record data about one person only. Others are designed to record the behaviors of a single teacher and that teacher's class simultaneously regardless of the size of the class. This is typical of the Withall-Flanders lineage systems. These are limited to use in a "classroom" setting in which there is one person in the role of the teacher, at least one person in the role of the pupil and some subject-matter content being dealt with. In addition, there are systems for a variety of pre-specified numbers of subjects.

A special technique for one-person-at-a-time observation, called *point-time sampling*, is used by six of the systems in this collection. These systems observe one person at a time for a

Figure 12: TYPES OF CODING UNITS

Category Change — a coder makes a new notation every time there is a change in behavior which can be represented by a new category in the system. For example, in an instrument that has a psychomotor dimension, a new notation may be made for each change in posture or for each gesture. If a subject sits motionless for ten minutes, the coder will not make a notation until there is a change in position which can be represented by a different category. This is the most common type of coding unit.

Time Unit — notations are made at fixed time intervals. The coder makes a notation at specified periods, whether or not activities or behaviors of the subjects change. For instance, if the predetermined time interval is ten seconds, the coder makes a notation every ten seconds. If the subject sits silently for one minute, the coder would make six notations for a category representing silent behavior. Behaviors occurring between the time intervals, but not at the specified instant, are not recorded. For example, if a strict five-second interval were being used and a teacher asks for the answer to the first homework question at the beginning of the interval, a student uses several seconds (through the first interval) in giving the answer and the teacher says "good" and immediately asks for the answer to the next problem through the end of the second five-second interval, the coder would record the first question (at the start), the answer (on the five-second mark), the second question (on the ten-second mark), but the praise behavior ("good") would be lost.

Speaker Change — notations are made each time a different speaker makes a comment.

Topic or Content Change — a coder makes a new notation every time the topic or content being discussed is changed. Coding of "topic" is characteristic of some of the cognitive systems. Usually, rather precise groundrules are generated for defining "change" of topic.

Time Sample — coder observes for a defined period of time and then records all the codable activities or behaviors that occurred during that period. A behavior or activity is recorded only once, even though it may occur several times during the specified period. The order of the events may be lost in the coding.

Audience Change — coder makes a new notation every time the speaker speaks to a new audience, for example, when a teacher switches her attention from a small group to the whole class.

Question-Answer-Response Unit — an interchange between two people. Systems which use this type of coding unit only do not code monologues.

Figure 13: SAMPLES OF CODING UNITS

Codes and Categories

Teacher

P Praises
F Deals with Feelings
NQ Narrow Question
BQ Broad Question
I/O Informs/Gives Opinion
CE Corrects Error
CS Criticizes Student

Student

SAQ Answers Question
SDS Defends Self

Time	Codes	Synopsis of Activity and Related Codes
9:00-00	NQ	As the coding session opens, the teacher is conducting a drill session with the students. She asks
05	SAQ	
06	P	the answer to the first homework problem (NQ).
09	NQ	The student gives the answer (SAQ) and the teacher
10	SAQ	says "good" (P) and asks for the answer to the next
15	SAQ	problem (NQ). The student reads his answer, which
16	CE	takes several seconds (SAQ, SAQ), and the teacher
18	NQ	corrects his wrong answer (CE), and asks the
20	SDS	question again (NQ).
25	SDS	The student who gave the wrong answer explains his
28	CS	reasoning (SDS, SDS) but the teacher says "That's
30	NQ	not making sense," (CS) and asks who else has the
32	SDS	answer (NQ). The student again defends himself,
35	SDS	and goes on for a little bit (SDS, SDS), whereupon
40	CS	the teacher gives a rather long criticism (CS, CS,
45	CS	CS) about rudeness and the importance of learning
50	CS	good manners. When she finishes scolding the stu-
55	CS	dent the teacher starts to give information on the
58	I/O	way to solve the problem correctly (I/O) and asks
60	NQ	for the answer to the last problem again (NQ).

TIME SAMPLE
(codes each behavior used but only once per session)

Code	Occurrence
Praise	X
Feelings	O
Narrow Question	X
Broad Question	O
Informs/Gives Opinion	X
Corrects Error	X
Criticizes	X
Student Answers Question	X
Student Defends Self	X

Maintains record of every behavior used. Sequence of behaviors not maintained (i.e., one can't tell if the teacher's criticism preceded or followed the student's self-defensive behaviors).

5 SECOND TIME UNIT
(codes behaviors occurring on the 5 second mark)

Time	Code
00	NQ
05	SAQ
10	SAQ
15	SAQ
20	SDS
25	SDS
30	NQ
35	SDS
40	CS
45	CS
50	CS
55	CS
60	NQ

Sequence of behaviors is maintained. Does provide some feel for duration of activity. Infrequently used behaviors lost (i.e., no record of "Teacher Praises").

CATEGORY CHANGE
(codes every new category as it occurs)

Code
NQ
SAQ
P
NQ
SAQ
CE
NQ
SDS
CS
NQ
SDS
CS
I/O
NQ

Record of all behavior and sequence of behavior maintained. Duration of behavior not recorded. No way of telling here that criticism is the most sustained behavior of the sequence.

Table 5: NUMBER AND TYPE OF SUBJECT OBSERVED

Systems 1 – 50	Number of Subjects Observed: Less Than Three: One Only	Number of Subjects Observed: Less Than Three: Two Only (Dyad)	Number of Subjects Observed: Three or More: In Classroom Setting	Number of Subjects Observed: Three or More: Non-Classroom Setting	Number of Subjects Observed: Point-Time Sample	Subject of Observation: In Classroom Setting: Teacher and Pupil	Subject of Observation: In Classroom Setting: Teacher Only	Subject of Observation: In Classroom Setting: Pupil Only	Subject of Observation: Non-Classroom Setting: Small Groups (Family, Task, Training)	Subject of Observation: Non-Classroom Setting: Family Dyads	Subject of Observation: Non-Classroom Setting: Counselor or Therapist with Patient	Subject of Observation: Non-Classroom Setting: Administrator/Supervisor and Supervisee	
1 Adams-Biddle			●			●							1
2 Altman			●			●							2
3 Amidon (MCS)			●			●							3
4 Amidon-Hunter (VICS)			●			●							4
5 Anderson, A.			●			●							5
6 Anderson, H. H.		●	●			●							6
7 Anderson-Bingman (COMIC)			●			●			●				7
8 Argyris				●					●			●	8
9 Aschner-Gallagher			●			●							9
10 Bales				●					●				10
11 Belzer-Evans (BTBI)	●						●						11
12 Barnes			●			●							12
13 Bellack			●			●							13
14 Bemis-Luft-Liberty (SCIOS)			●			●							14
15 Blumberg		●										●	15
16 Borgatta (BSs)				●					●				16
17 Brophy-Good			●			●							17
18 Brown (TPOR)	●						●						18
19 Brown, et al. (FTCB)			●			●							19
20 Buehler-Richmond	●	●	●	●		●							20
21 Clements	●						●						21
22 C.E.R.L.I. (CVC)			●	●		●			●				22
23 Denny-Rusch-Ives (CCOS)			●			●							23
24 Dibner	●										●		24
25 Dodl			●			●							25
26 Flanders (FSIA)		●	●			●							26
27 Flanders (EXPANDED)			●			●							27
28 Fuller (FAIR 33)			●			●							28
29 Gallagher			●			●							29
30 Galloway			●			●							30
31 Hall		●							●	●	●	●	31
32 Heger (MINI TIA)			●			●							32
33 Herbert (SAL)			●			●							33
34 Hill (HIM)				●					●				34
35 Hoffman				●					●				35
36 Honigman (MACI)			●			●							36
37 Honigman-Stephens (SAP)					●			●					37
38 Hough			●			●							38
39 Hughes			●			●							39
40 Hunter			●			●							40
41 Jansen			●			●							41
42 Jason (MIOR)	●						●						42
43 Jecker-Maccoby-Breitrose	●							●					43
44 Jones (SACC)		●	●			●							44
45 Joyce	●						●						45
46 Kounin			●			●							46
47 Kowetrakul					●			●					47
48 Lindvall					●			●					48
49 Lipe-Steen-Quirk (PLAN-SOS)					●			●					49
50 Longabaugh (R-P)	●	●		●					●	●	●		50

Table 5: NUMBER AND TYPE OF SUBJECT OBSERVED

Systems 51 - 99	Number of Subjects Observed: Less Than Three: One Only	Less Than Three: Two Only (Dyad)	Three or More: In Classroom Setting	Three or More: Non-Classroom Setting	Point-Time Sample	Subject of Observation: In Classroom Setting: Teacher and Pupil	Teacher Only	Pupil Only	Non-Classroom Setting: Small Groups (Family, Task, Training)	Family Dyads	Counselor or Therapist with Patient	Administrator/Supervisor and Supervisee	
51 Macdonald-Zaret			●			●							51
52 Mann				●					●				52
53 Matthews-Teacher (SCAS)	●						●						53
54 Matthews-Student (SCAS)					●			●					54
55 Medley (OScAR 4V)			●			●							55
56 Melbin				●								●	56
57 McREL (MIA)			●			●							57
58 Miller	●						●						58
59 Mills (SPA)			●	●		●			●				59
60 Morsh			●			●							60
61 Moskowitz (FLint)			●			●							61
62 Moustakas-Sigel-Schalock		●								●	●		62
63 Munby	●						●						63
64 Ober (RCS)			●			●							64
65 Oliver-Shaver			●			●							65
66 Openshaw-Cyphert	●						●						66
67 Parakh (VPBCS)			●					●					67
68 Perkins-Teacher	●						●						68
69 Perkins-Student			●					●					69
70 Polansky-Lippitt-Redl				●					●				70
71 Porter	●										●		71
72 Puckett			●			●						●	72
73 Ribble-Schultz			●			●							73
74 Riskin				●					●				74
75 Roberson	●						●						75
76 Roberts			●			●							76
77 Schalock (T-R)			●			●							77
78 Schusler (CIMAR)			●			●							78
79 Shrable-Minnis (CLAIM)			●			●							79
80 Simon-Agazarian (SAVI)	●	●	●	●		●			●	●	●	●	80
81 Smith (Logic)			●			●							81
82 Smith (Strategies)			●			●							82
83 Snyder		●									●		83
84 Solomon (TIP)	●						●						84
85 Spaulding (CASES)					●			●					85
86 Spaulding (STARS)	●						●						86
87 Spaulding (TSC)			●			●							87
88 Steen-Quirk-Lipe (PLAN-TOS)	●						●						88
89 Steinzor				●					●				89
90 Stukat-Engstrom	●						●						90
91 Taba			●			●							91
92 Tyler			●			●							92
93 Waimon	●						●						93
94 Wallen, et al. (STEPOS)			●			●							94
95 Withall	●						●						95
96 Withall-Lewis-Newell			●			●							96
97 Wragg			●			●							97
98 Wright			●			●							98
99 Wright-Proctor			●			●							99
Total for 99 Systems	23	10	58	15	6	56	17	9	15	4	7	6	

specified length of time and then move to another person until the specified sample is exhausted. The result is a series of observations focused on individuals rather than a group. All of the systems using point-time sampling focus on some aspect of nonverbal behavior.

Of the twenty-three systems that focus on one person only, all but a few are specifically designed to collect data about the teacher in a classroom setting. Dibner (24) records the patient only, and Porter (71) the therapist. The others, Buehler (20), Longabaugh (50) and Simon-Agazarian (80) are reported as having been used to record the behaviors of one person at a time but also can be used for dyads and with small groups.

Of the ten systems reported as being used with dyads, four have been reported as being designed for describing interactions between dyads only. This does not necessarily mean that they can only be used for dyadic interaction, but rather that this is the only use reported by the authors of the system. For example, the Blumberg system (15) was designed to help supervisors evaluate their own work. To utilize this system, a tape recording is made during supervisory sessions and this tape recording is later coded by the supervisor as a means of helping him evaluate his own skills. However, this system could probably also be used by a supervisor working with more than one supervisee. Similarly, the two systems designed for analyzing counselor-counselee interaction, Moustakas-Sigel-Schalock (62) and Snyder (83), could be used to analyze group interaction. Also, the Hall proxemic system (31), which is reported as being used only with dyads, could be modified to record proxemic relationships among three or four persons simultaneously.

For those systems that deal with more than two people, a distinction has been made between systems used in classroom settings and those used in other kinds of settings. All those designated for use in the classroom are designed to code the behaviors of both the teacher and pupils with but three exceptions: Jecker-Maccoby-Breitrose (43), Parakh (67) and Perkins (69). The Jecker-Maccoby-Breitrose system (43) is a 14-item rating scale used to analyze the nonverbal behavior of students. The system is used to evaluate a series of film clips taken of the students one at a time. The Perkins system (69) is designed to code "student behavior" only. However, a companion instrument (Perkins, 68) is available for coding teacher behaviors. The other "pupil only" systems are point-time samples.

Some systems are designed for use with more than two people in other-than-classroom settings. Examples are the Melbin system (56) used in a department store and the several systems dealing with training groups or therapy groups. As noted in Table 5, many systems can be used in more than one way.

Subject of Observation

The largest number of systems, eighty-two of the ninety-nine, are those used for classroom observation. Fifty-six are used to collect data about both teachers and pupils, an additional seventeen are used for teacher behavior alone and nine for pupil behavior alone (see Table 5).

Because most of the systems that observe pupils only are concerned with behaviors of the individual child rather than the class of pupils, the "point-time sampling" technique is used for collecting information about each child. This method is used for coding the Honigman-Stevens (37) and Lindvall (48) systems developed for studying individualized learning settings, and for the Lipe (49) system originally designed for evaluation of Project PLAN (Program for Learning According to Needs). The Kowatrakul (47) and Matthews (54) systems, which describe activities performed by pupils in the classroom, and the Spaulding (85) system, which observes pupil motor behavior, also use the "point-time sampling" technique.

Of those systems used in settings other than the classroom, three are useable with small groups. (The editors have included Hall's proxemic system (31) on the assumption that it can be used to observe more than two people simultaneously.) A "small group" is defined to mean a face-to-face group of more than two people, exclusive of classroom groups. A "classroom group" is defined as one where the roles of "teacher" and "students" are specified and specific subject matter content is being dealt with.

Four of the systems – Hall (31), Longabaugh (50), Moustakas-Sigel-Schalock (62) and Simon-Agazarian (80) – have been used with family dyads; that is, parent/child, or husband/wife, and these same four have also been used for recording data about counselors or therapists and their patients.

Six systems have been used to collect data about administrators and their subordinates: Argyris (8), Blumberg (15), Hall (31), Mills (59), Puckett (72) and Simon-Agazarian (80). Included in this set are systems that deal with supervisor-supervisee interactions.

Setting Used

Twenty-seven systems have been used in other than classroom settings. These include systems for observing T-groups, task groups, therapy groups, patients or inmates and staff in institutional settings, counselor-counselee and therapist-client interaction, parent-child or husband-wife dyads, supervisor-supervisee and administrator-subordinate interaction as well as a system for observing nonverbal behaviors of dyads wherever they occur. Table 6 lists the settings in which the authors report their various systems have been used.

Three systems have been used in industrial settings. Argyris (8) and Blumberg (15) have used their systems as a means of collecting information to serve as a data-base for the change process in industrial settings. In both cases, the information collected was used by the authors and their colleagues to help administrators and supervisors gain insight into the differences between how they do act and how they think they act; between how they believe they are perceived by others and how they are actually perceived.

A report by Argyris (1969) on the use of his system in research studies includes a description of norms of the "industrial culture," such as not sharing feelings, not doing the maintenance work (building of working relationships) necessary for optimum group efficiency,

Table 6: SETTING AND USES

Systems 1 - 50	Setting In Which Used						Uses Reported by Author			
	Classroom, any content	Classroom, for specific subject	Commercial or Industrial	Counseling or Therapy	Group Dynamics	Other	Research	Training	Evaluation	
1 Adams-Biddle	●						●			1
2 Altman	●	●					●			2
3 Amidon (MCS)	●						●	●		3
4 Amidon-Hunter (VICS)	●						●	●		4
5 Anderson, A.		●					●	●		5
6 Anderson, H. H.	●						●	●		6
7 Anderson-Bingman (COMIC)	●						●			7
8 Argyris			●		●		●	●		8
9 Aschner-Gallagher	●						●	●		9
10 Bales				●	●		●	●		10
11 Balzer-Evans (BTBI)		●					●			11
12 Barnes	●						●	●		12
13 Bellack	●	●					●			13
14 Bemis-Luft-Liberty (SCIOS)	●						●			14
15 Blumberg	●		●				●	●		15
16 Borgatta (BSs)					●		●			16
17 Brophy-Good	●						●			17
18 Brown (TPOR)	●						●	●	●	18
19 Brown, et al. (FTCB)	●						●	●	●	19
20 Buehler-Richmond	●					●	●	●		20
21 Clements	●	●					●			21
22 C.E.R.L.I. (CVC)	●						●	●		22
23 Denny-Rusch-Ives (CCOS)	●						●	●	●	23
24 Dibner				●			●			24
25 Dodl	●						●			25
26 Flanders (FSIA)	●						●	●		26
27 Flanders (EXPANDED)	●						●			27
28 Fuller (FAIR 33)	●						●	●		28
29 Gallagher	●						●			29
30 Galloway	●						●	●		30
31 Hall						●	●	●		31
32 Heger (MINI TIA)	●						●			32
33 Herbert (SAL)	●						●	●		33
34 Hill (HIM)				●	●		●	●		34
35 Hoffman					●		●			35
36 Honigman (MACI)	●						●	●		36
37 Honigman-Stephens (SAP)		●					●		●	37
38 Hough	●						●	●		38
39 Hughes	●						●	●		39
40 Hunter	●	●					●			40
41 Jansen		●					●		●	41
42 Jason (MIOR)		●					●	●		42
43 Jecker-Maccoby-Breitrose	●						●	●		43
44 Jones (SACC)	●						●		●	44
45 Joyce	●						●	●		45
46 Kounin	●						●			46
47 Kowatrakul	●						●			47
48 Lindvall		●					●			48
49 Lipe-Steen-Quirk (PLAN-SOS)	●						●	●		49
50 Longabaugh (R-P)				●	●	●	●			50

Table 6: SETTING AND USES

Systems 51 - 99	Setting In Which Used						Uses Reported by Author			
	Classroom, any content	Classroom, for specific subject	Commercial or Industrial	Counseling or Therapy	Group Dynamics	Other	Research	Training	Evaluation	
51 Macdonald-Zaret	●						●			51
52 Mann					●		●			52
53 Matthews-Teacher (SCAS)	●	●					●	●	●	53
54 Matthews-Student (SCAS)	●	●					●	●	●	54
55 Medley (OScAR 4V)	●						●			55
56 Melbin			●				●			56
57 McREL (MIA)	●						●			57
58 Miller	●						●	●		58
59 Mills (SPA)	●	●			●		●	●		59
60 Morsh	●						●			60
61 Moskowitz (FLint)		●					●	●		61
62 Moustakas-Sigel-Schalock				●		●	●			62
63 Munby		●					●			63
64 Ober (RCS)	●						●	●	●	64
65 Oliver-Shaver	●	●					●			65
66 Openshaw-Cyphert	●						●			66
67 Parakh (VPBCS)	●	●					●			67
68 Perkins-Teacher	●						●			68
69 Perkins-Student	●						●			69
70 Polansky-Lippitt-Redl					●		●			70
71 Porter				●			●			71
72 Puckett	●							●		72
73 Ribble-Schultz	●						●	●		73
74 Riskin						●	●			74
75 Roberson	●						●	●		75
76 Roberts	●	●					●			76
77 Schalock (T-R)	●						●	●		77
78 Schusler (CIMAR)	●						●	●	●	78
79 Shrable-Minnis (CLAIM)	●						●	●	●	79
80 Simon-Agazarian (SAVI)	●			●	●		●	●		80
81 Smith (Logic)	●						●			81
82 Smith (Strategies)	●						●			82
83 Snyder				●			●	●		83
84 Solomon (TIP)	●						●	●		84
85 Spaulding (CASES)	●						●	●		85
86 Spaulding (STARS)	●						●	●		86
87 Spaulding (TSC)	●						●			87
88 Steen-Quirk-Lipe (PLAN-TOS)	●						●	●		88
89 Steinzor					●		●			89
90 Stukat-Engstrom	●						●	●	●	90
91 Taba	●	●					●	●		91
92 Tyler	●						●			92
93 Waimon	●						●	●		93
94 Wallen, et al. (STEPOS)	●						●	●		94
95 Withall	●						●	●		95
96 Withall-Lewis-Newell	●						●	●		96
97 Wragg		●					●	●		97
98 Wright		●					●			98
99 Wright-Proctor		●					●			99
Total for 99 Systems	72	22	3	8	11	5	98	52	12	

and not encouraging "risk-taking" (discussing information which is potentially useful, but which might subject the speaker to reprisals). The norms of administrator-subordinate interaction are similar to the norms reported in research about the classroom by Bellack (13).

Similar norms seem to hold in supervisory interactions. A study by Blumberg (34) has indicated, for example, that supervisors in education rarely ask supervisees what they think next steps should be, and overwhelmingly make proposals for supervisee action without involving the supervisee in the process of solving his own problems. A generalization about the norm for all superior-subordinate interaction:

superior talks and subordinate listens
superior questions and subordinate answers
superior proposes and subordinate agrees

and nobody talks about feelings. The players in the industrial setting and the classroom dance to the same tune - only the words and titles change.

Eight systems have been used in counseling settings and eleven in group settings. In the former set, the purposes have generally been for research on the relationship between counselor and counselee behaviors. In the latter, however, several systems – Bales (10), CERLI (22), Hill (34), Mann (52), Mills (59) and Simon-Agazarian (80) – have been taught to group members as a method for helping them gain insight into their own patterns of behavior and control over a process for bringing their behavioral "reality" more in line with their intent. Thus, these systems were used not only for research on the group, but also as content and skills to be learned.

To date, only two "group" systems are reported as being used in the classroom - Mills (59) and Simon-Agazarian (80). Only one classroom system has been reported as being used in group settings - CERLI (22).

A few systems have been used in unique settings. The Buehler system (20) has been used to collect information about verbal as contrasted with nonverbal reinforcement of staffs and inmates in correctional institutions for delinquents. Verbal behavior was often found to be incongruent with the nonverbal, and the nonverbal behavior of both staff and peers frequently reinforced anti-social behaviors and penalized socially desirable behaviors. The Hill system (34) has also been designed for use in corrective institutions, and the Longabaugh system (50) for use in mental institutions. The Hall system (31) was designed for collecting data in anthropological field settings, the Moustakas-Sigel-Schalock system (62) to study mother-child and therapist-child interaction both in the home and in laboratory settings. The Polansky-Lippitt-Redl system (70) was originally used to study leadership and behavior contagion in camp settings, and the Riskin system (74) to collect information about whole-family interaction. Twenty-two systems used in classrooms have a specialized focus. They are listed in Table 7.

Table 7: THE SPECIALIZED FOCUS (AS REPORTED BY AUTHORS) OF SELECTED SYSTEMS USED IN CLASSROOM SETTINGS

SYSTEM	SPECIALIZED FOCUS
ALTM[illegible]	Science
ANDERSON, A.	Medicine
11. BALZER-EVAL	Biology
13. BELLACK	Economics
21. CLEMENTS	Art
37. HONIGMAN-STEPHENS (SAP)	Learning Activities Program (Individualized Learning)
40. HUNTER	Science
41. JANSEN	anish (native) language
42. JASON (MIOR)	Medicine
48. LINDVALL	Individually Prescribed Instruction (Individualized Learning)
53. MATTHEWS-Teach (SCAS)	Science
54. MATTHEWS-Student (SCAS)	Science
59. MILLS (SPA)	Interpersonal Behavior
61. MOSKOWITZ (FLint)	Foreign Language
63. MUNBY	Science
65. OLIVER-SHAVER	Controversial Issues
67. PARAKH (PBCS)	Biology
76. ROBERTS	Religion and Values
91. TABA	Social Studies
97. WRAGG	Foreign Language
98. WRIGHT	Mathematics
99. WRIGHT-PROCTOR	Mathematics

Data Reduction

Having decided to collect the data the user is faced with the task of reducing them to some useable form because observation systems generate data. Lots of data! How these data are organized is dependent upon the use the systems are put to and the kind of coding unit they employ. For some systems this implies no more than a frequency count of the types of coded tallies. Other systems look for the relationship between the dimensions being coded, and still others look for the kinds and frequencies of sequential activities.

Check-Lists – Both time samples and point-time samples are usually recorded on a pre-printed "check-list" that provides space to note the occurrence of each category of the system.

Time samples are binary, that is, they note only the presence or absence of a particular category during the sample. Of course, to increase their accuracy, several time samples are usually taken and they are summed together and often averaged.

With a point-time sample, a group of people is observed and only one category per person is noted. These, too, are usually checked off on a pre-printed form (see Figure 14). Here, a series of samples are usually made and then totaled and averaged.

Any system which uses the same categories to code the behaviors of all members of the group (for example, teachers and students could be coded on the same categories) can be used as a point-time sample system or as a time sample system. Categories for any system can be listed on a pre-printed form and each occurrence of a category checked against the list continuously for some length of time to get some sense of the frequency of that occurrence.

Figure 14: LINDVALL'S POINT-TIME SAMPLE CHECK-LIST

Time _____ Subject _____

Observer _____ Date _____

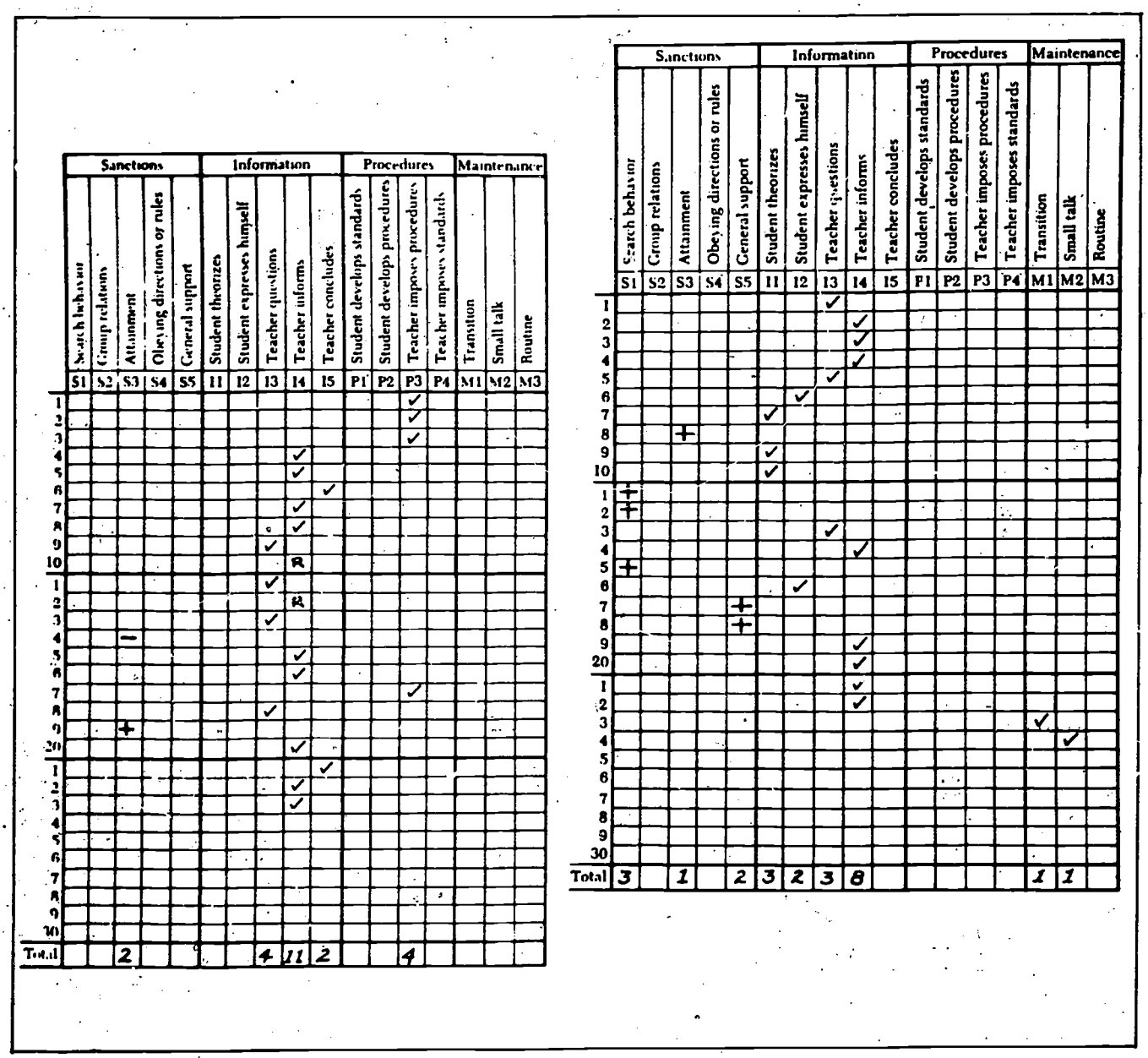
	1	2	3	4	5	6	7	8	9	10	Sum	%
I. Independent Work												
A. The student is reading independently	//	//	///	/	//	/	//	///	//	///	22	8.8
B. The student is working independently on a work sheet	///	///	///	///	///	//	///	/	/	/	32	12.8
C. The student is individually listening to a tape recorder			/		//			//	//	//	9	3.6
D. The student is independently viewing a film strip			//		//	/	/	/		/	8	3.2
E. The student is independently checking his work	/		/		//						4	1.6
F. The student is working with a language master						//	///	//	/		8	3.2
G. The student is working with a disc-phonograph	//		/			//					5	2.0
H. The student is using programmed material						//	//	//	/		7	2.8
I. The pupil corrects a test (Makes corrections)	///	//	//		/						8	3.2
J. The pupil takes an individual test	///	//	///	///	///	///	///	///	///	///	34	13.6
K. The pupil corrects a study exercise	/					///		/			5	2.0
L. The pupil works with supplemental reading material		/	/		/	/	/		/		6	3.4
M. The pupil makes corrections on test												
N. Miscellaneous						//	//	//		//	8	3.2
II. Teacher-Pupil Work												
A. The pupil seeks assistance from the teacher	/	///	//	///	//		/	//			15	6.0
B. The pupil receives assistance from the teacher	//		/	///	//	/	/	//	/		13	5.2
C. The pupil discusses his progress with a teacher						/	/			/	3	1.2
III. Non-Instructional Use of Pupil Time												
A. Pupil spends time at desk not working	///	/	/	/		//	//	//	/	///	17	6.8
B. Pupil waits for teacher or clerk to provide lesson materials for him		/				/	/	/	/	/	6	2.4
C. Pupil waits for prescription									//	//	4	1.6
D. Pupil goes to get materials				/					///	/	5	2.0
E. Pupil waits for papers to be corrected by a clerk		//	/	/		/			/	//	8	3.2
F. Pupil talks to other pupils	/	///	/	///	//				//	/	13	5.2
G. Pupil leaves room to get material		/		/	/				///	/	8	3.2
H. Miscellaneous												
IV. Pupil-Pupil Activity												
A. Pupil asks assistance from another pupil					/						1	.4
B. Pupil receives assistance from another pupil					/						1	.4
V. Group Activity												
A. The pupil contributes to a group discussion												
B. The pupil takes a group test under supervision												
C. The pupil answers a question directed to him												
D. The pupil asks a question												
E. The pupil listens to a teacher lecture or demonstrate												
F. The pupil watches a film with the group												
G. The pupil listens to records with the group												
H. The pupil watches a performance with the group									-			
I. Miscellaneous												
Totals	25	25	25	25	25	25	25	25	25	25	250	100

65

Patterns – Some systems code directly onto a seating chart or other arrangement that notes physical spaces. See Adams and Biddle (1) and Puckett (72). Others use pre-printed sheets similar to those discussed earlier.

Both category change and time unit systems can be coded onto pre-printed sheets to supply a "category pattern." For some systems the categories are listed across the page and the sequence of occurrence is provided by coding vertically down the page (see Figure 15),

Figure 15: JOYCE'S PATTERN CODING SHEET: TWO TEACHING STYLES



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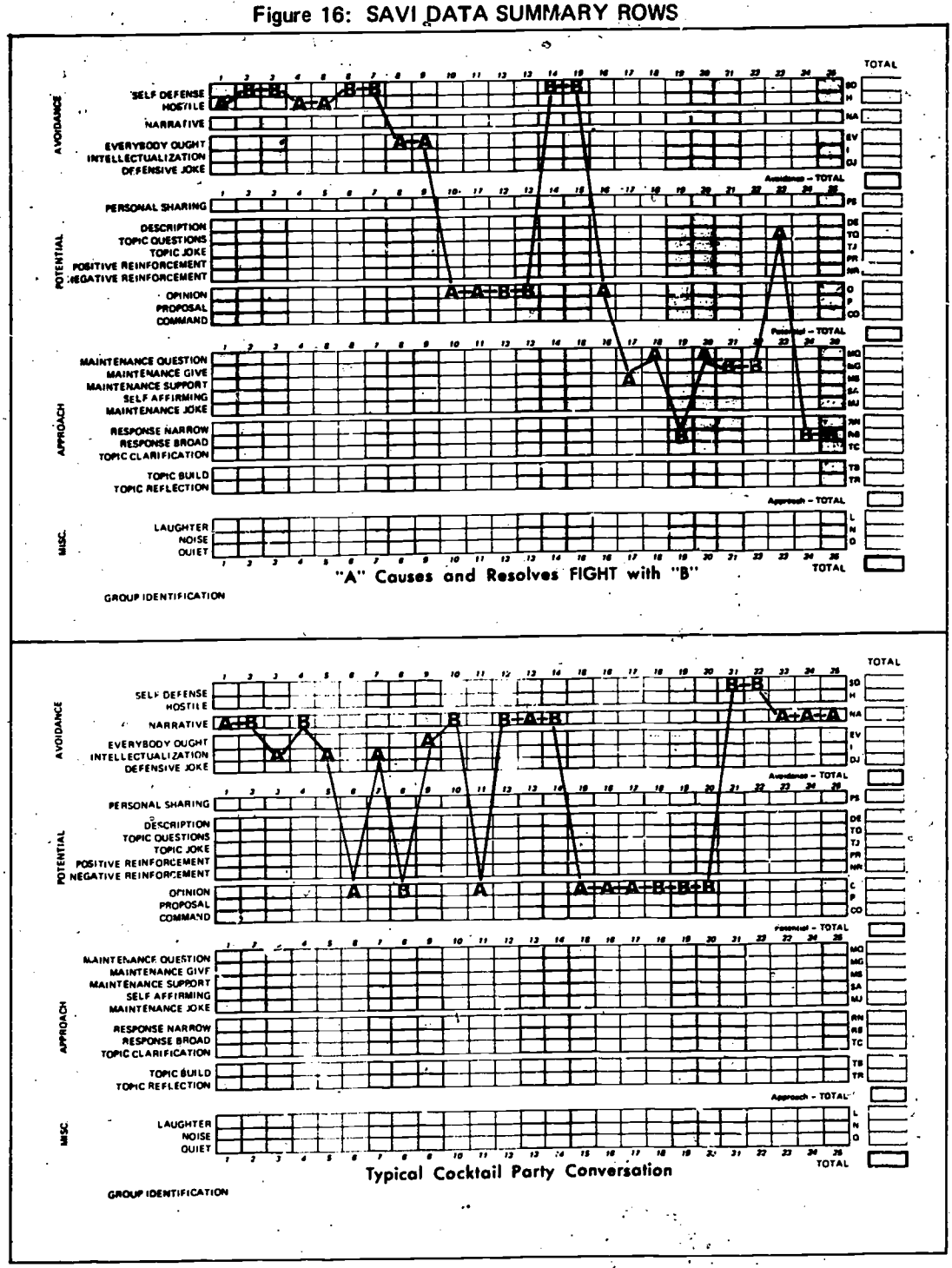
and other systems have coding sheets that reverse the axes and the coding is done horizontally (see Figure 16). To preserve both the sequence and some record of frequency, it is possible to use a continuous category pattern sheet such as the one sometimes used with Simon-Agazarian (80) for live coding.

Figure 16: SAVI DATA SUMMARY ROWS



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Matrix — Most Flanders-type systems record lists of the actual codes themselves and then transfer the lists of codes into some other format. One of the most popular is a matrix where although actual sequence is lost, the relationship of any pair of behaviors is retained. A great deal of information can be condensed in this manner.

For example, using the Flanders ten-category system as an illustration, the matrix consists of one hundred cells made up of ten cells in each of ten rows. Each cell represents a combination of *two* behaviors. A tally in a cell represents a *behavior pair*, the first element of which can be any of the ten Flanders categories and the second, any of the same ten categories. Thus, if a teacher responds to a student-initiated idea (9) with praise (2), there will be a tally in the cell of the matrix which represents the behavior pair student initiates idea — teacher praises (9-2); whereas, if the teacher responds to a student idea (9) with criticism (7), a different cell (9-7) will receive a tally. Figures 17 and 18 are examples of the procedure for building a matrix based on the Flanders categories

Figure 17: PAIRING CODES FOR MATRIX BUILDING

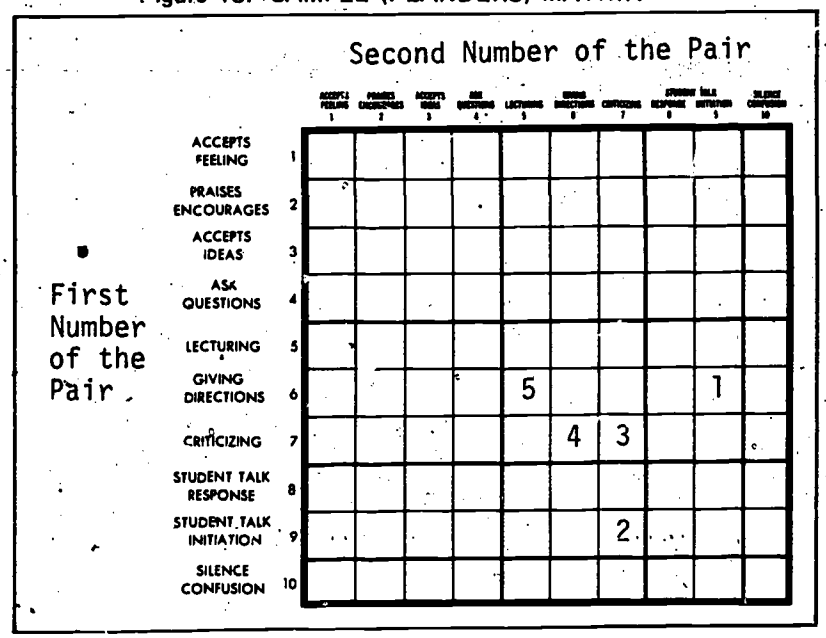
The teacher says:"Boys and girls, sit down and open your workbooks" (gives directions, category 6). One of the children says, "But, Mrs. Adams, I thought you said we were going outside this morning" (student talk — broad response, category 9). The teacher reacts by saying, "Paul, you know the class was so noisy yesterday that we decided to work in our workbooks instead of going outside. I don't like it when you forget these things, Paul" (criticism lasting for six seconds, category 7). (The observer records two 7's, one for every three-second interval.) Then the teacher continues, "Now I think we can open our workbooks. Remember this new workbook is different from our old one." The first part of the statement is a direction (6) and the last part, lecture (5). The observer has recorded the following column of numbers and (after the observation period) has paired them as shown below:

	6 command
1st pair —(	
	9 student talk, broad
2nd pair -)	
	7 criticism
3rd pair -(	
	7 criticism
4th pair -)	
	6 command
5th pair -(	
	5 teacher lecture

Category numbers are entered into a matrix in sequence *pairs* in such a way that each number is entered twice, once as the first number in a pair and once as the second number in a pair. The rows of the matrix represent the first number in the pair and the columns, the second number in the pair.

For example, the first sequence pair, 6-9, would be tallied in the cell that is located at the intersection of row 6 and column 9. The next pair is entered in cell 9-7, the cell at the intersection of row 9 and column 7; the third pair, 7-7, into the cell located at the intersection of row 7 and column 7, etc. Figure 18 shows the actual location of these five tallies in the matrix.

Figure 18: SAMPLE (FLANDERS) MATRIX



This procedure is repeated for as many pairs of tallies as the observer has made. A twenty-minute observation (about four hundred tallies) is recommended as a reasonable minimum to get a picture of what is going on in a classroom. The code numbers can then be developed into a matrix to supply a "snapshot" record of what has been happening.

Matrix building is a clerical task that is time-consuming. And more and more, computers are being programmed to accept tallies on key punched cards or optically scanned sheets and supply a matrix as output. For large groups of observations it is frequently more effective to generate key punched cards or optical scanning sheets and use a computer to develop the matrices and also whatever statistical analyses are desired.

For convenience, in order to balance out a matrix, most users add a 10 (silence) at the beginning and end of each group of tallies from which a matrix is to be built. This assures that every tally will be used twice, once as the first and once as the second part of a pair. In this manner, the row and column totals for the matrix will be the same; that is, the number of tallies along row 1 will equal the number of tallies in column 1, and total of the sums of all the rows will equal the total of the sums of all of the columns.

To simplify dealing with a matrix it is useful to translate the tallies into percentages. Much information about teacher-pupil interaction can be gained from looking at the percentage* of tallies in each column and row (see Figure 19).

In the Flanders system, as in many other systems, the main kinds of talk are determined by who is talking (either teacher, pupil or no one) and by types of teacher talk (in this case "direct" or "indirect"). Information about the kinds of teacher talk occurring in the classroom can be found from looking at the totals of the teacher talk columns, 1-7 (see Figures 18 and 20). The sum of the columns of indirect categories 1 through 4 can be compared with the sum of the direct category columns 5 through 7 to determine how much of the time that the teacher is talking he is being indirect and how much of the time he is being direct. In this way the frequency of occurrence is available much as it was in Figure 15 earlier.

Figure 19: SUMMARY MATRIX SHOWING COLUMN TOTALS AND PERCENTAGES

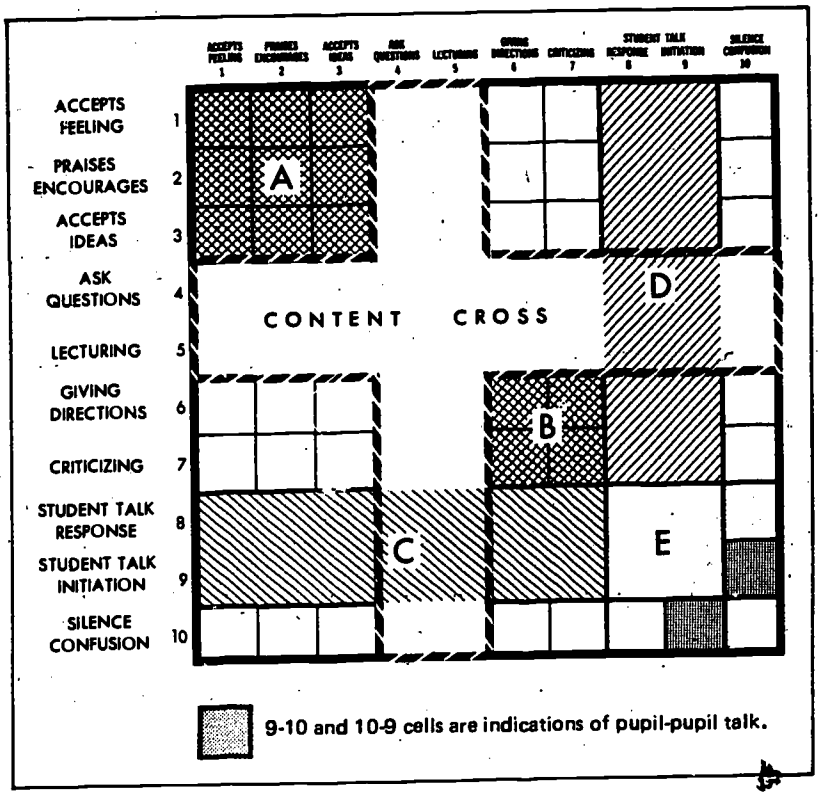
	1	2	3	4	5	6	7	8	9	10	TOTAL
1 ACCEPTS FEELING											0
2 PRAISES ENCOURAGES		20		20	10	10					60
3 ACCEPTS IDEAS			10	10							20
4 ASK QUESTIONS				50				31	10		100
5 LECTURING					10					10	20
6 GIVING DIRECTIONS						22		10			32
7 CRITICIZING				1			7				8
8 STUDENT TALK RESPONSE		30					1	39			80
9 STUDENT TALK INITIATION			10						30		40
10 SILENCE CONFUSION				10						30	40
TOTAL	0	60	20	100	20	32	8	80	40	40	400
PERCENT	0	15	5	25	5	8	2	20	10	10	100
	TEACHER TALK							STUDENT TALK		QUIET	

Looking inside the matrix itself, the distribution of tallies in the cells yields a different kind of information than column total information, because each cell represents a sequenced pair of behaviors.

*Percentages are calculated by dividing the number of tallies you wish to convert to a percent by the grand total of tallies in the total matrix, and multiplying the answer by 100.

Patterns of the tally distribution tend to fall into specific types. The major areas of interest are indicated in Figure 20.

Figure 20: AREAS OF A FLANDERS MATRIX



The Content Cross – indicates extended teacher lecture or questions. Most of the time when teachers talk to classes, they are either telling something to the class (category 5), or asking a question (category 4). Research performed in public schools in a variety of grade levels and subject-matter areas indicates that the majority of teacher's talk lies in an area on the matrix that rather resembles a cross (columns 4 and 5, rows 4 and 5). The more flexible the teacher, the more tallies there are likely to lie outside the content cross. In general, most teacher tallies can be found within the content cross and these are centered in the 5-5 and the 4-4 cells, indicating that the majority of teacher talk is spent giving extended information and asking questions. The higher the grade level, the more likely the chances that if a teacher is talking, he will be using extended lecture (5-5 cell). For college teachers, of course, this figure is very high, and in many university classes, 95 percent teacher lecture is not unusual.

Area A: The Extended Indirect or Encouragement Behaviors consists of nine cells in the intersection of columns and rows 1, 2 and 3. This area represents behaviors which help keep

the classroom discussion moving and facilitate the pupils' work by accepting their ideas and their feelings or by praising them. These behaviors potentially reinforce student contributions and tend to encourage their recurrence.

Area B: Extended Direct Influence Through Command and Influence Behaviors are represented in the intersection of columns and rows 6 and 7. The cells in this area would show a heavy distribution of tallies if the instructor being observed was controlling. Area B is sometimes called the "vicious cycle" because it can indicate a cycle of maladaptive behaviors in the classroom. This buildup would occur if a teacher gave an extended command (cell 6-6) which the student did not obey, and which brought forth a rebuke from the instructor followed by a repetition of the original command (command followed by criticism followed by command and then more criticism (6-7-7-6-6-7-7). This cycle indicates that there may be "discipline" problems.

Area C: Reinforcement of Pupil's Comments (teacher reaction to student behavior) contains the tallies of all the behavior pairs Student Talk followed immediately by Teacher Talk. This area shows what kinds of behaviors the students in this classroom have learned to expect from their instructor. Area C provides rough answers to such questions as "Does this instructor ordinarily respond to pupil's comments positively or negatively?" and "Does this instructor respond differently to narrow student comments than he does to broad ones in which the students are processing their own ideas or thinking on higher levels of abstraction?" One can also learn whether the instructor tends to help students clarify their own ideas or whether he tends to comment on or evaluate the ideas himself.

Area D: Student Immediate Response to Teacher Behavior shows how students respond to the teacher. Instructors have a broad range of behaviors which induce students to become active in classroom interaction.

Area D reveals which instructor behaviors prompt what kind of student participation. An instructor who allows students to talk only when he asks a question ("What is the difference between a paw and a foot?") or gives a command ("John, read page eight.") would have buildup only in those cells on row 4 - question and 6 - direction. In contrast, an instructor who has a dialogue going in his classroom in which pupils interact with him after a variety of kinds of comments will have tallies in all cells except row 7 - criticism and to a lesser degree, row 6 - directions.

Area E: Extended Student Talk indicates either how much of the time is spent having students read aloud, perform group activities, or give answers to previously memorized homework assignments, as indicated by a large buildup in the 8-8 cell. In contrast, for a classroom where students spend much time discussing hypotheses and opinions, asking questions and clarifying their own ideas, there would be a large buildup in the 9-9 cell.

USES – THE PRESENT AND FUTURE APPLICATIONS OF OBSERVATION INSTRUMENTS

Observation instruments saw their beginnings as research devices to collect observable, objective data about human interaction in a variety of settings. And as Table 6 shows, all of these systems except Puckett (72) have been used for research purposes.

But, unlike most research instruments, many of these have gradually been changed to training tools which are used to give information directly to the people who are being observed. Fifty-two of the ninety-nine systems have been transformed from research to training instruments. These for the most part are designed to help teachers, counselors or group members gain insights about their behaviors as well as to provide a language for prescribing new behaviors for themselves and to help them be able to determine if they have met their own behavioral goals. Training in process observation is now a requisite part of many teacher-education programs, and training workshops in interaction analysis systems for in-service teachers are increasingly common.

Research

In general, observation systems have provided a mechanism for describing the role of the teacher as it exists in reality, in contrast with prescriptions found in education literature. Descriptive research using observation systems indicates that the role of the teacher appears to be exceedingly consistent across grade levels, subject matter areas and geographic regions. Even under widely divergent circumstances, such as tutoring individual students in an Individually Prescribed Instruction setting, team versus individual teaching, or teaching honors classes contrasted with average or "modified" classes, teacher behaviors do not appear to change in different settings nor with different pupils. The role of the teacher even seems to resist curricular innovations such as new math and physics, a matter of great concern to those who designed the new curriculum to be used in a new way by teachers.

The use of observation instruments provides the educational theorist a way to discern the actual teaching patterns in existing classrooms and then to reformulate models of effective teaching by either 1) learning which teacher behaviors correlate most highly with pupil growth or 2) determining which behaviors teachers are currently using only minimally (or not using at all) which theoretically could contribute to pupil growth. In general, studies indicate that simple memory recall is the most common mental activity solicited by teachers.

Another use of observational systems has been experimental research in which a particular teacher style is theoretically constructed from the categories of a classroom observation system and contrasted with a different teaching style or strategy. In these experiments, a trained role player teaches the same content to two different groups of "matched" students, using two different teaching styles. Experiments of this type provide a first step in testing theoretical models of effective teaching.

A final step in model development is field testing. This occurs when actual teachers are trained to be able to use a model style or strategy. However, widespread experimental research involving the training of teachers to produce certain types of behavior styles is pretty much an activity of the future. Current activity is primarily limited to model building and to the spelling out of behavioral objectives for certain types of teacher strategies such as inquiry training, raising the thought level of an entire class of pupils, or conducting discussions using an indirect teacher strategy.

Although these models are, in general, not yet ready for field testing, they have provided materials for training teachers, and these strategies are practiced in training programs of those teacher-training institutions possessing the skilled staff resources to implement a program focusing on teacher behavior. Similar types of research efforts are found sporadically in the field of group dynamics, in therapy, in parent training and in industrial management training.

Teacher Training

Ordinarily when those educators responsible for teacher training modify programs, they change the structure or sequence of these programs. Unfortunately, changes in structure and sequence of professional education courses appear to have little effect on the overt behavior of teachers or student learners. If teaching behavior is to be changed, then teachers must have an opportunity to study their own teaching and experiment with and practice new teaching behaviors. Only when the focus of the teacher education program is on the teaching act itself can we expect changes or improvement in the behavior of teachers.

Thus, the rationale for using these systems in teacher training is twofold. First, the systems provide a mirror for the teacher to obtain feedback about his own teaching behavior along the dimensions of the particular system used. This feedback provides the teacher with the opportunity to change his own behavior based on data about what he is doing in the classroom. Second, and perhaps more important, many of these systems have been constructed along a theoretical dimension which includes behaviors which are presumed to be helpful in promoting pupil growth if used in the classroom, but which are not ordinarily found in the classrooms of America today. When a teacher uses one of these systems, he gets feedback about the behaviors which he is *not* using, as well as those which he is. This supplies the chance to learn new behaviors and thus expand the teacher behavior repertoire in ways not ordinarily available to teachers.

An example of a skill session (in constructive listening) that has been used to help teachers learn how to accept students' ideas and feelings is one in which teachers are seated in small groups and asked to carry on a conversation. However, a ground rule is established so that before anyone can make a statement of his own, he must give evidence of having heard the previous speaker by reflecting the idea or feeling of the previous speaker to the satisfaction of that speaker. That is, he must reflect what the previous speaker has said in such a way that the speaker knows that he has been accurately heard and, in addition, does not

feel that his ideas or feelings have been disapproved of. Although this sounds easy to do, it is not. People who have tried it often report, "It is not easy to hear the other guy because I'm trying to think of what *I* want to say."

Acceptance, reflection, or clarification of students' ideas and feelings are behaviors which help set a climate of trust in which the speaker feels free to say what he is thinking. They are common therapeutic techniques often used in counseling sessions. They are behaviors which a counselor or a psychologist uses to help his client learn to think through and clarify his own thoughts and emotions. In that way, the client ultimately learns how to develop criteria for deciding what he, himself, wants to do, rather than needing to remain dependent on outside advice to tell him what is right and what is wrong. These therapeutic behaviors which promote a climate for growth can be acquired by anyone from skill sessions in which the persons holding a dialogue are asked to periodically reflect the feelings of previous speakers and then to check out to see if they were accurate.

Although the skill of accepting an idea without evaluating it does not sound difficult, research indicates that teachers normally use little of reflective behavior in their teaching. In order to acquire this skill, training is necessary.

Several projects have been run in which teachers were taught to analyze their own behavior. In one type of study, researchers trained teachers to produce specific new behaviors. When teachers used these new behaviors, pupil behaviors changed correspondingly.

Using a different approach, in several studies using the Flanders system (26),* teachers were taught the system itself, were asked to determine for themselves what kinds of behavior they wished to use and were given the opportunity to practice the new behaviors in role-play situations. Given the choice of behaviors to use, they became more indirect, more supportive and less controlling, and their pupils were more highly supported for expanding on their own ideas rather than giving fact-level answers to narrow questions. This implies that teachers do have an interest in becoming more supportive of pupils, but do need to have objective feedback which enables them to know when *what they are doing* differs from *what they want to do*. These systems provide a method for checking perception against reality, and this feedback alone may help teachers become more effective without the necessity for an outside monitoring force such as administrative evaluation.

In the past decade teacher-training institutions increasingly have become aware of the value of providing teachers with a tool with which they can gain objective feedback about their own teaching behaviors. Courses in the use of classroom observation systems are now given in colleges, workshops and in-service training programs (at least in the "Free World")**

*For a self-study kit, see: *Interaction Analysis – A Mini-Course*, produced by the Far West Laboratory (by Ned A. Flanders, et al.). Available from Paul S. Amidon, Associates, 4329 Nicollet Avenue South, Minneapolis, Minn. 55409

**Anita Simon (ed.), *Classroom Interaction Newsletter*, Volume 7, No. 1, December, 1971 and Volume 7, No. 2, June, 1972, Philadelphia, Classroom Interaction Newsletter.

and are becoming more easily available both to teacher trainers and to classroom teachers themselves.

Although the face validity of the virtue of any communicator being able to vary and control his behavior is widely acknowledged, research on just what "teacher behaviors" relate to what "pupil outcome" is spotty and largely inconclusive.

We tend to think of a set of behavioral skills as being needed to describe a teaching act designed to meet a goal. Thus, in the last analysis, the choice of goals remains crucial. For example, a teacher (or administrator) who favors teaching on a rote-memory level will probably be effective for that goal; that is, his students' learnings will probably consist of memorized data and processes. Before that statement is shrugged off as irrelevant to the reader, let us add that research indicates that the vast majority of teacher-pupil interaction, as well as test questions, are aimed at the lowest cognitive levels. Consciously or not, memorization of teacher words or text is the overwhelmingly favorite cognitive process in our classrooms.

Effective teaching for the memorization process, however, is clearly different from effective teaching for creative thinking or for meaningful solution of relevant problems. A wide variety of teaching goals may be as important a parameter for teaching effectiveness as the methodology for accomplishing those goals.

There is probably no such thing as a universally "good" teaching behavior. For example, even "praise," although almost universally thought of as effective in the folklore of teachers, is inappropriate as a facilitator of learning in at least several kinds of learning situations. For instance:

> During a "discovery" lesson, if a teacher "praises" the answer he likes, he defeats his own goal of having pupils focus on their mechanisms for using data (rather than using teacher cues) to make their own decisions. Many students' experience in school leads them to equate teacher approval with "the right answer."
>
> Praise may be ineffective in accomplishing a teacher's goal when a female teacher is working with adolescent boys who are working through a stage of rebellion. In this case, praise is often translated by the pupil to "If I do what the teacher wants, my friends won't like it." In this setting, a teacher who helps the *student* decide what is "good for him," has at least some hope of maintaining rapport with that student so that the student can continue to use the teacher as a learning resource.

The following are listings of some of the dimensions of teacher behaviors and learner behaviors from which a teacher (or supervisor, administrator or helping agent) might select specific behaviors to reach specific goals. As goals differ, various teacher (and pupil) behaviors will be appropriate and others will be non-appropriate for that specific goal.

Of the items in the following listings none can be thought of as good or bad in themselves; most are useful in at least some teaching situation. They provide some of the crucial variables to be considered in working toward any specific goal. The presence or absence of each teacher behavior, and the amount to be used, however, can be assigned to a specific lesson only after the goal for that lesson has been selected.

With this in mind, here are some of the dimensions of the art of teaching that seem worthy of consideration. We have broken them down into seven general types. They are:

Participation: Amount and Kind
Cognitive Level
Affective Climate
Classroom Control
Pupil-Pupil Interaction
Teacher Role Flexibility
lassroom Methods

Clearly these are not all of the classroom variables and perhaps not even the most important. We offer them here only as an indication of the kind of repertoire required in the typical classroom. They are a beginner's list gleaned from the observation instruments in this anthology. They have nothing to do with knowledge of the content to be taught. In fact, like most observation instruments, they are content free. Neither do they deal with the complex diagnostic and prescription skills required of the master teacher be he in a classroom, group setting, therapist's office or counseling setting.

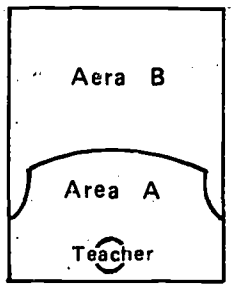
Participation: Amount and Kind – As long as schools continue to be places where students are congregated into groups and a "teacher" lectures to and in other ways controls that group, the ability to involve the total group will be important. Here are some possible criteria:

1. demonstrate the ability to deal with a variety of numbers of pupils:
   - teacher working with more than one class at a time
   - teacher working with whole class
   - teacher working with small groups
   - teacher working with individual student
   - teacher alone, and pupils working in small groups or on individual projects.

2. demonstrate the ability to establish climate where all pupils are free to participate.
   Sample performance criteria are:
   - pupils respond to teacher narrow questions % of the time (fill in % relevant to specific goal).

- pupils respond to teacher broad questions % of the time (fill in % relevant).
- pupils spontaneously share their ideas and feelings with teacher % of the time (fill in % relevant).
- pupils spontaneously share their ideas and feelings with other pupils (in a manner that everyone relevant *can* hear) % of the time (fill in % relevant).
- pupils in classroom area B talk as much as pupils in area A.

Note: Research by Adams and Biddle (1) indicates that an arc of silence, shaped roughly like area B, exists in most classrooms, and that pupils in this arc of silence are likely to be ignored simply because of the geography of the room..



3. demonstrate the ability to react to individual differences.
   Sample performance criteria are:
   - the quietest (specify number) pupils in the class in the beginning of the semester increase their spontaneous participation during the semester, both in terms of answering narrow questions and in terms of volunteering to share more meaningful information.
   - the most verbal (specify number) pupils at the beginning of the semester demonstrate increasing ability to defer to others during the semester.

4. specify and demonstrate the ability to vary the amount of teacher talk in the class, and the amount of student talk.
   Complete the following (or similar) check-lists and match your behavior to your goal for the specific lesson:
   - specify % (maximum) teacher talk to whole class.
   - specify % (minimum) and % (maximum) teacher talk to small groups of students.
   - specify % (minimum) and % (maximum) teacher talk with individual students.
   - specify % (minimum) student talk to other students in small group setting.
   - specify % (minimum) individual work time, with materials, books, equipment.

5. select and elicit appropriate *kind* of pupil talk to meet a specific goal:
   - specify % (minimum) and % (maximum) of student talk or response to *narrow questions* posed by you, a text, or a workbook.

- specify % (minimum) of student talk or response to *broad questions* or problems posed by you, a text, or a workbook.
- specify % (minimum) of student talk in response to *broad questions* or problems posed by other students in the class.

Cognitive Level –

1. vary the kind of cognitive processing taking place in the classroom setting:
   - demonstrate the ability to phrase questions on a variety of levels (from Aschner-Gallagher system 9):
     - *Memory Level* – Operations taken to involve only such thought processes as recognition, rote memory and selective recall. Verbal performances of this general type represent the simple reproduction of facts, formulas and other items of remembered content).
     - *Convergent Thinking Level* – Answers to questions or problems reached by reasoning based upon given and/or remembered data.
     - *Divergent Thinking Level* – Operations with a definite, but somewhat "data poor," framework. The respondent is put "on his own" with the structure to range broadly and freely in his thinking to select and construct a large number of possible ideas, associations, implications of which no single one could be predetermined as uniquely right or correct. The individual thus generates his own further data (ideas, associations, etc.) in producing his responses to the question or problem at hand.
     - *Evaluative Thinking Level* – Deals with matters of value rather than matters of fact and is characterized in verbal performance by its judgmental quality. The speaker often calls for or gives a judgment of something in terms of its desirability, worth, acceptability or probability of occurrence (see Generalized Category System, Figure 5).

2. induce pupil talk and writing on a wide variety of cognitive levels.

   Sample performance criteria are:
   - for each lesson teacher can specify and elicit pupil behaviors as appropriate for his goal for that lesson:
     - specify % (minimum) and % (maximum) pupil talk on memory level.
     - specify % (minimum) and % (maximum) pupil talk on convergent thinking level.
     - specify % (minimum) pupil talk on divergent thinking level.
     - specify % (minimum) pupil talk on evaluative thinking level.

3. use a logical sequence of cognitive processes with students by moving students through some cognitive sequences such as the following (from Taba, system 91):
   - collecting data
   - grouping data into sets
   - labeling the sets (making categories)
   - drawing inferences from the data
   - making generalizations from the data
   - making hypotheses from the data
   - testing the hypotheses with new data

4. demonstrate knowledge of problem-solving structures and utilize these structures with students by using some general problem-solving sequence such as (from Allen and Rott, 1969):
   - can tell when a term has been adequately defined.
   - can identify certain common types of misuses of language.
   - can distinguish between an argument and a description.
   - can distinguish among questions of truth and validity.
   - can recognize certain common types of errors in drawing conclusions about matters of fact.
   - can decide whether an inductive conclusion is warranted.
   - can identify a hypothesis.
   - can tell whether a given statement is a useful prediction from a hypothesis.
   - can tell whether or not the variables in an experiment have been adequately controlled.
   - can tell when a variable is relevant.
   - can distinguish hypotheses which assert necessary conditions from hypotheses asserting sufficient conditions for the occurrence of an event.
   - can evaluate the reliability of items of information.
   - can tell whether or not a deductive argument is valid.
   - can identify and evaluate different types of explanation and tell what type is appropriate to a given situation.
   - can locate and identify assumptions.
   - can recognize a value statement and decide when it is justified.

Affective Climate –

1. On the assumption that the "affective climate" of the classroom is in large measure controlled by the teacher behavior, exhibit the use of emotionally supportive behaviors and limit the use of emotionally non-supportive behaviors:
   - accept the feelings of pupils.
   - share own "similar" feelings with pupils.

- express pleasure about pupil's verbal or nonverbal activities, such as 1) getting the right answer, 2) following instructions, 3) doing unexpected, constructive activities – creative expression, making proposals, disagreeing with teacher on cognitive level, or other behaviors that express child's uniqueness and difference of perception from that of the teacher or other classmates.

2. exhibit non-judgmental behaviors and delimit the use of judgmental behaviors. (See nearly any Flanders-type system, and especially Simon-Agazarian, system 80.)
   - accept student's ideas (do not evaluate but give indication that you hear and understand).
   - clarify understanding.
   - reflect or paraphrase student's ideas.
   - expand on a student's idea.
   - specify the results of judgmental behavior and utilize it only when it meets your goals.

     Note: Teacher judgments, such as "that's right," "that's wrong," "that's good," "that's bad," form a large part of the traditional role of the teacher. Performing the evaluation function *for the learner* relieves the learner from the responsibility and the opportunity of making and having to back-up his own judgments.

     Because judgmental behaviors by the teacher limit pupil opportunity to think through and express his own judgments, and because they are so much in the habit patterns of most teachers, their use might best be limited to cases where they will bring about a specifically desired end.
   - demonstrate ability to encourage students to make judgmental statements, giving their criteria for making statements.

Classroom Control – Classroom control procedures are of two basic types, those which are teacher-control oriented, and those which are basically pupil self-control oriented. No classroom represents a pure variety of either type.

1. specify correctly when you are using control procedures demonstrating predominantly teacher-oriented control for: a) content, b) procedures or methods of working with content, c) discipline, d) administration (routine, non-lesson related tasks).

2. demonstrate ability to encourage, reaffirm and maintain climate for *student* self-control over: a) content, b) procedures or methods for studying content, c) discipline, d) administration.
   - demonstrate ability to involve pupils in planning for and actualizing selection of meaningful content.
   - demonstrate ability to create climate of freedom for each pupil to participate in selection of procedures or methods appropriate for each of them for studying content.

- demonstrate ability to create climate of pupil self-responsibility for creation and enforcement of meaningful, individually accepted norms or behavior.
- demonstrate ability to create work-oriented climate administered jointly by teacher and pupils.

Pupil-Pupil Interaction –

1. induce climate of information sharing among pupils:
   - pupils spontaneously express feelings (both positive and negative).
   - pupils test assumptions, their own, each other's, and the teacher's.
   - pupils support, clarify and elaborate on each others ideas.
2. help pupils develop increased skills of effective communication.
   - pupils demonstrate the ability to actively listen to each other – to reflect ideas of other students accurately (both those with which they agree and those with which they disagree).
   - pupils actively participate in discussion and information sharing.
3. develop a variety of pupil roles in the classroom, among them initiator, respondent, helper, information-retriever, clarifier, supporter, confronter, summarizer, process observer. Your pupils would be able to demonstrate the ability to fill above roles and others as needed.
4. encourage activities in which pupils learn about their own participation in the learning process so that:
   - pupils give and accept feedback about their behaviors and the roles they play in the learning process.
   - pupils use feedback to plan and try new modes of participation in the learning process.

Personal Relations –

- exhibit the ability to assume a variety of roles and a variety of behaviors within those roles in relationship to school personnel other than students, such as colleagues, parents, school administrators, in order to optimize his effectiveness with pupils.

  Sample performance criteria are:
  - listen "actively" to parent, colleagues, supervisors, etc. with whom you agree, and with whom you disagree.
  - specify needs assertively and non-defensively.
  - deal sensitively with feelings of people who have different styles and needs than your own (see pages 69 and 70).
  - seek or accept new tasks and acquire resources for teaching: 1) new content, 2) new procedures, 3) new media.

Classroom Methods –

– demonstrate the ability to deal with a variety of classroom methods, such as:

  - *Lecture or Preach* – One channel (eyes OR ears), one-way communication (teacher to pupil), low learner involvement, including all audio-only media (tape recordings, radio, records) or print materials.
  - *Demonstration* – Multi-channel (eyes and ears, etc.), one-way communication, low learner involvement, including all audio-visual media (television, films), chalk talks, field trips.
  - *Discussion* – One channel, two-way communication (teacher to pupil, pupil to teacher, pupil to pupil), verbal, includes some role playing, most "games," group work and therapy.
  - *Test and Review* – One channel, two-way communication, includes written tests, most tutoring activities.
  - *Pupil Projects* – Multi-channel, two-way communication, high learner involvement, includes most forms of manipulative procedures such as industrial arts, home economics, fine arts and business machine courses typically offer.
  - *Simulation* – Multi-channel, two-way communication with high learner involvement, includes most role playing, some games, some "training projects" and usually collects and uses data about the learner.

Supervision

Like any other form of evaluation, supervision can be used for two purposes: either to provide feedback for the use of the *supervisee*, or to supply a rating or grade for the supervisor's use. All too often, supervision is of the latter variety, perhaps because until recently, tools for providing objective feedback about teaching and other interpersonal performance have been lacking.

The substitution of classroom observation systems for supervisory rating scales or check sheets fills this lack, for these observation systems separate the descriptive from the evaluative functions of the supervisor. Rating scales for supervision are still in far more common use than observation systems even though rating scales have been shown to be more related to the value structure of the person constructing the scale (such as liking or not liking strong disciplinary measures, order in the classroom, good housekeeping practices, rapport with students, etc.) than they are to pupil achievement.

An observer's job is more limited than a rater's because the observer is forced by the system to describe what is happening. Thus an observer is likely to report such items as the teacher is "asking a question" or "reinforcing a child's search behavior" or "lecturing" or "elaborating on a student statement," but he is not called upon to evaluate these actions while he is observing. To the extent that observation systems are as ideal as possible, personal value

judgments by the observer about the actions of the teacher are eliminated, so that the end product tells what actually happened in the classroom, while the end product of a rating schedule more likely tells how the rater felt about what happened in the classroom. The shift from rating scales to observation systems makes it possible for the supervisor to shift his role from boss to partner, that is, from the stereotypic role of evaluator to the more flexible one of professional resource and collaborator. As such, the role of the supervisor becomes one of making available techniques for developing personalized teaching styles in line both with the personality of the teacher and the pupil achievement goals desired.

Obviously, the development of a wider range of teaching styles and the study of their relationship to pupil outcomes have a long way to go. If the goal of supervision is the improvement of teaching rather than the rating of teachers, then the use of objective feedback instruments allows for such supervisory innovations as teachers working together in groups to give each other feedback and to suggest changes. The indications are that teachers who do learn a classroom observation system do change their behaviors in accord with what they want to do, and that school study groups can learn to work together to improve their teaching.

Educators expect that research findings will make an impact on teaching practice. That is why we do research. Classroom observation instruments are research tools originally designed for collecting research data. In a sense, when teachers use these systems to obtain feedback for self-supervision, they are performing "micro-research" on their own behavior in their own classroom. From this they gain data with which to formulate new hypotheses about the effectiveness of their own teaching technique to test in their next "micro-research" study. It would be strange indeed if it were the *methodology of research*, rather than the *findings*, which in the long run changes teaching practice. It might well be.

Observation Instruments as a Substitute for Tests

Ordinarily when one thinks of testing in schools, it is in the context of a pupil taking a test which his teacher scores. The score is then placed in the teacher's roll book and used for determining a grade for the pupil's report card. Sometimes the test results are discussed with the pupil and sometimes not. In general, the flow of information is from the pupil who takes the test to the teacher who marks the test and uses the information to "grade" the pupil.

But, observation instruments are a different kind of testing tool. Typically, when observation systems are used (for other than research purposes) the main recipient of the information is the learner himself, not the teacher. The learner is taught the criteria for evaluating his own actions and provided with measuring instruments to help him see how much he has grown in the direction he has planned. This occurs because the learner owns the actual data (not someone else's evaluation) about his performance from which he can gain a realistic picture of his level of achievement. This changes the concept of testing from one of a teacher evaluating pupils against other pupils to one of a pupil evaluating himself against his chosen goal.

Using feedback for self-evaluation against self-determined goals is one of the main strategies for moving from dependence to independence. Only as learners gain a realistic picture of their behaviors and compare them against their expectations is there less need to turn to outside authorities for direction. Through this process, learning comes from feedback which the pupil gets from his own attempts at mastery. This is analogous to learning in sports. In football, for example, the learner kicks the ball, and he can see whether or not it is over the goalpost. He does not need a teacher to tell him that his kick was worth an "A" or a "D." In fact, the outside evaluation of the kick is irrelevant to the obvious learning that comes from seeing where the ball went. What is needed is data about why the ball went where it did.

Since most feedback from teacher to pupils is in the nature of evaluation (that was an "A" paper or a "D" report) rather than reporting of data, much of the pupil's school experience is divorced from the process of getting feedback about the subject matter itself. This is so much the case that often pupils do not know what grades they are getting until after they look at their report cards.

This also accounts for the reactions of surprise from many freshmen mathematics and physics students upon finding that their texts have the answers in the back of the book. Many are not even sure that this is a good idea, claiming that students may cheat if the answers are available. To the extent that this is felt by students, it is apparent that the concept of using answers for self-guidance is missing. Thus the data-feedback model as a substitute for the more traditional testing model is based on providing feedback to the learner in terms of his own mastery of materials and his own progress toward goals, not in terms of evaluations which compare his work against other pupils to determine a grade.

This model is already common practice in the training procedures of workshops and courses which teach the use of interaction analysis systems. Twelve of the systems in this anthology are reported by their authors to be used in this manner as evaluation instruments. In these cases, evaluation consists of using the observation instrument as a tool for describing the behaviors of the personnel using new curriculum materials or for analyzing the materials themselves. The descriptions generated by the analysis are compared with a statement of goals for teachers' behaviors or for the materials themselves. This use of an evaluation instrument changes the concept of "evaluation" from rating on a "good-bad" continuum to comparison of what is with what was expected.

The non-classroom systems have had a similar history of conversion from research use to training, particularly in the field of group dynamics where a fortunate few have been learning observation systems in workshops and courses as a means of checking out their own behavior and modifying it.

So too, have the growing number of "attitude" indicators.* Understanding the different attitude patterns that people have is not terribly important where human interaction is limited. Being understood is not particularly important in a culture where people are relatively independent, where decisions are usually made by individuals acting alone and usually on tasks that are physical. But late 20th century culture minimizes independence. Instead we are increasingly dependent upon our interactions in groups of all sorts. Our tasks are more mental than physical, and more interactive than independent. Thus our need for understanding each other increases and becomes critical.

For instance, the tradition-oriented, nine to five person is almost always baffled by the fellow who ignores company hours even though he gets the job done. The "nine to fiver" does not understand how a person can both stay till midnight to finish a job and then expect to take the next day off. Conversely, the clock-ignorers are baffled by conscientious time-watchers. They rarely understand a person who will go home before a job is finished.

These two "types" of people are both necessary. In the extreme they provide the poles of stability on the one hand and innovation on the other. They have basically different life styles, different personalities and different attitude patterns, and for the most part, they behave differently. Even their verbal patterns tend to be different.

In our culture, time-watchers, those people who are good about schedules, budgets, deadlines and such, tend to move toward accounting, finance and into administrative positions. As such, they are often the bosses or supervisors of time-ignorers. Now, often time-ignorers are innovators, creators, and norm breakers. Their attitudes ruffle administrators who need to maintain a sense of corporate stability. If a time-ignorer's useful ideas for improvements are to be accepted in a corporation, it is he who is going to have to assume the responsibility for "selling" his ideas. He will have to do the work of translating his ideas (and his norms) into language his boss can understand. In those environments where the time-ignorers understand and accept the task of the communications and take initiative, they in turn are usually accepted as valuable by the tradition-oriented time-watchers. Unfortunately, it seldom occurs to most freedom-oriented time-ignorers that they have responsibility for communication and many of them spend their lives surprised that they are not understood. Awareness of this need can change their lives.

Because information is a form of power (and information about ourselves and each other is no exception), the need for understanding people different from ourselves and the need to understand ourselves better exists for all people – not just for the psychologists who make their living at it. So, the tools that help in acquiring information to understand ourselves and others are gaining new uses.

These various instruments have become useful devices for adults to use to predict the effects of their behaviors upon others, to collect information about themselves and to

*See, for instance: Kenyon Runner, *A Theory of Persons: Runner Studies of Attitude Patterns*, San Diego, Calif., The Runner Associates, and Philadelphia, The Humanizing Learning Program, Research for Better Schools, Inc., 1973.

deliberately change how they act. It seems reasonable to expect that so valuable an addition to the development of basic "human skills" as these instruments appear to be would be a very valuable addition to the subject matter our children learn in schools.

We are not talking here about becoming a different person, a different personality, being false to oneself, acting artificially, or even doing or not doing one's own thing. We are talking about something rather simple in practice the ability to be aware of the difference between what one *intends* to do and what one *is* doing, and methods for *closing the gap*. This often seems more complicated than it needs to be because talk about changing behavior is confused with talk about changing feelings or changing "personality." Once it is recognized that *feeling and thinking* are different from *doing*, that feelings are not controllable, they just *are*, but behaving and doing are controllable, then behavioral training is often simplified. For example, everyone feels angry at times, but there is more than one way to handle anger, and some ways are more effective than others. Though one cannot help but *feel angry* when one *is angry*, one can learn to express that anger in ways more likely to bring about consequences which are desirable rather than disastrous.

Substitution of data collection instruments for evaluative tests provides a way of getting data about reality which is essential to being able to constructively change and grow. Observation systems serve the vital function of getting this reality-data to people. And this function is too important to be reserved only for the few professional disciplines that currently own systematic ways of sharing reality-data with people in their professions. We maintain that tools for learning about one's own most meaningful behavior are as essential a "tool subject" as reading and arithmetic. Often the difference between "success" and "failure" is the difference between using a very few appropriate rather than inappropriate behaviors, and using appropriate, useful behaviors is a skill as learnable as when and how to add or subtract.

Observation Instruments as Content

We have talked about the value of the use of these systems to researchers, to teacher trainers, to teachers, to supervisors and to people who need data about what they are really doing. Now what about applications to the be-all and end-all of the education business – the student?

Classrooms are places designed to grow pupils, that is, to help them change. It is a characteristic of our culture that change is usually not based on realistic information but instead is based on fear: "Stop that, or I'll send you to the principal!" "Study hard, or you won't pass the college entrance exams." etc. Motivation operates only in the present tense, and a great deal of classroom motivation is the creating of enough anxiety about the future to force an action in the present. However, motivation through threat breaks down when the teacher meets a population that appears to have nothing to fear. For example, part of the dread of working with "disadvantaged" children is that they are not afraid of things they are

"supposed" to be afraid of, and therefore the usual arsenal of "motivational" devices does not work. When pupils are not afraid of being scolded, sent out of class, failed or even expelled, what is the poor teacher to do? Or the law enforcement officer for that matter? Clearly, a new approach is needed.

Classrooms are places designed to help pupils *continue* to grow: that is, to provide the skills to allow students to learn, even when they are not in school. But in most schools the curriculum is geared to memorizing facts. "List the 92 elements" – (or is it 98, or 101, or 121?). In a world where half of the products we consume didn't exist when we were born, memory alone has limited utility and "education for life" can no longer mean "I've learned all I need to know." In our culture, rote is no longer right, if it ever was. The rapid changes in our culture are leaving our schools behind and largely out of touch with the reality of here and now, to say nothing of leaving them without the means of preparing pupils for the reality of a tomorrow we can scarcely imagine.

We believe that observation instruments offer a way to change education. These tools have a promising future as subject matter content. Children themselves can be taught these systems so that they can monitor both their own approaches to learning and their own patterns of behavior.

For instance, most pupils do not want to hear things that are unpleasant about themselves, but receiving and using data about themselves (both positive and negative) is how pupils grow. Acquiring and processing data about oneself is a way of confronting reality, and teaching pupils descriptive systems by which they can get (and give) descriptive and non-evaluative "feedback" from peers and teachers alike seems to be one way of taking a giant step forward in bringing the classroom closer to the reality that both pupils and teachers experience outside the classroom.

Techniques can be developed for students to practice and evaluate their reactions to, and awareness of, their own feelings and the feelings of others. Children learn to differentiate between varying types of verbal behavior very early. Proposals or descriptions are very different from self-defensive and hostile statements. Having pupils practice varying verbal patterns and helping them identify the effects of these patterns on others can improve pupils' ability to communicate.

A pupil can learn about individual differences by noting that people have different tolerances for the amount and kinds of data they are comfortable sharing, and he can learn to hear other people's opinions of him as their *opinions* and not necessarily as *facts* about him. He can learn to separate opinion from data, learn to "own" his own feelings so that he doesn't talk about "we" or "they" when he means "I," and can learn to "check out" his perceptions of reality by collecting feedback data.

The possession of these skills lessens both the generation-gap problems and the cultural-gap problems so often present between the faculty and students in our urban schools.

Even more important to the learning process is the likelihood that teaching children the skills of effective discrimination is a direct way to develop a sense of self-worth, self-motivation and self-direction.

A good education is hard to come by but its description is easy to state: An educated person is one who can recognize a problem as a problem and has optimized his chances for solving it. How to solve problems; how to communicate; and how to know, "be" and accept oneself are only now becoming a direct concern of curriculum builders. In our culture these skills are prerequisite to effective, productive living. And helping students acquire the tools for self-evaluation and improvement of perceptual, communication and problem-solving skills is a job that schools must do.

We have been talking about affective systems as content. Cognitive systems also generate potential content. In the cognitive area, recall, data processing and evaluation are very different from each other. When verbalized, these differences become apparent and clearly separable. When they are, they can be identified and new judgments can be made about their appropriateness to any given situation. It appears that verbal interaction systems can be identified for use as content in such a way that pupils can acquire the ability to "evaluate" their own data processing techniques. Further, they can learn to develop criteria for choosing appropriate cognitive sequences to match against problem types, and can literally learn to improve their own probability of success. Such adaptations are a major concern of the editors and their colleagues.

In one way or another most of these instruments are a part of the history of man's struggle to understand and control himself, control his environment, and thus control his future. The instruments in this anthology (and the many mentioned but not included) give a synopsis of over half a century of such effort by psychologists, sociologists, anthropologists, educators and others whose common contribution to our culture are better tools for quantifying and describing human behavior. It is our hope that like us, others will find in these efforts some of the necessary building blocks for a better tomorrow.

The last quarter of the 20th century will be as change oriented as the first quarter in which the rudiments of these instruments began to appear. These instruments developed originally to quantify human interaction will be modified now to enhance it. That is, these instruments will be used to make specific the personal goals of our culture and of education, thus providing the means for:

1. Movement from illusion toward reality and data orientation – The ability to operate in the world as it is rather than as the child wishes or fears it to be.
2. Movement from irresponsibility to responsibility – The ability to perceive, predict, and accept the consequences of one's own actions.
3. Movement from dependence to independence and interdependence – The ability to be self-reliant, self-motivating, self-evaluating and the ability to act from choice rather than react to compulsion.

Laudable though these goals may be, they can not be taught. Environments can not be designed to enhance the likelihood of widespread acquisition of needed skills unless they are defined in measurable terms. A step in that direction is development of more specific "learning goals" such as:

Affective Skills –

- Identify, label and describe feelings as such and differentiate between the various subsets of complex emotions, like love or guilt. (The usefulness of affect, we believe, is enhanced by increased recognition and understanding of its complex nature.)
- Understand that *feeling* is not the same as *doing*.
- Utilize affect to generate or inhibit personal action.
- Increase enthusiasm for a task by engaging in a series of steps such as relating the current task to relevant past successes, or generating images of the positive feelings completion of the task will make possible.
- Deliberately seek others whose enthusiasm level is higher than one's own.

Cognitive Skills –

- Locate concrete phenomena or data that relate to abstract concepts; make the link between generalizations and empirical support.
- Process complex ideas, such as relating more than one variable or relationship at a time; analyzing, evaluating, synthesizing, predicting.
- Own the ability to see conditions or events as "reversible" and "changeable."
- Generate "new" ideas, relationships, applications, products, etc.
- Own the concept that one's own cognitive map of the world is different from other people's maps and that other people's maps are as real as one's own.
- Can accept that other people have different feelings and ideas than oneself.
- Can separate one's "opinions" from data.
- Seek out and use both data and cognitive strategies in solving life problems, that is, not act on impulse or opinion when data are available.

Interpersonal Skills –

- Differentiate between and describe different interpersonal behaviors.
- Consciously modify behavior toward children and adults to get more of whatever is wanted.
- Predict effect of differing behaviors on other children, adults and upon oneself and be able to test those predictions.
- Predict effects of others' role behaviors on oneself and to "handle" those effects.

Social Skills –

- Understand the many things that make up a social role, that is, the system to which the role belongs (father/mother, parent/child, husband/wife, in family system; and student/teacher in school system) and the reciprocal of the role (husband is the reciprocal of wife, student is the reciprocal of teacher and both parent and adult can be reciprocal with child), as well as the acceptable social behaviors (norms) of the role under typical conditions and under conditions of stress.
- Look at oneself and others in the many roles they play in the larger social system. The student is also a child, a consumer, possibly a sibling, and a friend.
- Recognize the need for more than one role.
- Be able to shift into a variety of different roles appropriately.
- Display the appropriate kaleidoscope of behaviors necessary to maintain simultaneous interdependent roles effectively.

Observation frameworks can thus themselves be used as content for the curriculum. But, equally important, they are a crucial link between the *intent* of the curriculum builders and the actual implementation of a curriculum in the classroom.

Observation Instruments – A Technology for Specifying the Conditions for Learning

In order to include this content in schools, a supporting learning environment, different from that of most classrooms, is needed. There are two main differences between the needed learning environment and that of the traditional schoolrooms. To begin with, there is a difference between knowing and behaving. In order to be able to *perform* the skills of a behaviorally-based curriculum, an environment has to be provided which allows students to experiment with their behaviors. This means providing an emotional atmosphere in which it is safe to make mistakes and even to "waste time."

Most useful learning takes place in an experimental environment. For example, we learn to drive a car by actually driving a car, not by reading a book about how to drive a car. Learning consists of a process of making and correcting mistakes. Sometimes these mistakes are dangerous, as many who have followed a novice driver down the street can attest. But society defines driving knowledge as being able to drive a car, not just passing a written test about car-driving.

In order to specify *knowing how* rather than *knowing about* as content, low-risk environments must be provided. Society does this in the case of the learner driver by, for example, insisting that a licensed driver accompany the learner, and by labeling the learner's car or license with a symbol meaning "Beware, learner in action." In the same way, the school environment for learning new skills must be structured in such a way that the learner has maximum freedom to experience new behaviors and the consequences of those behaviors, while he and the bystanders (including the teacher, parents and administration) are protected.

The second difference from the traditional classroom setting is often called "knowledge integration," that is, the learning environment must provide for the difference between knowing a piece of information and knowing what meaning that information has for one's own life.

Even if a learner experiences something new, the act may not have meaning to him unless the environment allows and encourages him to integrate the new experience into his own personal framework. This difference between experiencing something and integrating its meaning into one's own life is not generally known. For example, some of the newer curricula specify sensory activities for pupils in which they sniff different odors (such as banana, wintergreen, soap) in order to experience the sense of smell; look at different specified colors; feel different textures; and so forth. However, rarely is the learning environment specified which would enable the student to discover the personal meaning of the experience for himself. Thus, a student might very well go through this experience and learn what bananas or wintergreen smell like without himself, his teacher or his peers discovering, for example, that he has such accurate sensitivity to odors that he can detect the chemical contents of a mixture. Or, in other cases, that he is color blind, or has unusual ability to detect high pitch correctly or possesses "perfect pitch," or can pick out a tune on a musical instrument after having heard it only once, or can repair mechanical objects without having first been taught how.

In experiential learning, the learner must be the teacher, for the content of the lesson is the unique meaning of the experience for each learner. This meaning resides in the learner, not in the teacher and not in the text. And to provide the necessary environment for such learning, teachers must first be aware of, and in control of, their own verbal and nonverbal communication to students just as they now control the subject matter of the lessons taught in traditional classrooms. Second, they must understand what "kinds of environments" tend to foster or inhibit what effects in others. Consider just one of many approaches to human development, that of the increasingly popular "self-actualizing sequence."

Actualization of human potential is not a new concept. It is inherent in the Hebrew word for God ("I am becoming"), is as old as Zen, and is even basic to ancient Greek Humanistic philosophy. Never, however, in the history of culture has self-actualization as a construct received so much attention.

Self-actualization, or the actualization of human potential and resources, is a force and a focus in the present era that mobilizes many different movements and is central to many apparently different modes of thinking and living.

Self-actualization is the force behind:

- the *affective* and *cognitive* expansion of the transcendentalists, the users of psychedelics, and the exponents of bio-genetic and brain wave feedback.
- the *interpersonal* growth movement's interest in encounter groups, human relations training movements, and applied social science.

- the *moral* codes of existentialists and situation ethics.
- the *physical* concerns for health food, organic farming, Zen macrobiotics and bio-genetics.
- the *social* growth concerns that manifest themselves in free school movements, minority group liberation, organization development, and the growing concern about potential over-population in the zero-growth movement.

The word *self-actualization* itself has become identified with Abraham Maslow, who in the "60's" helped launch the humanistic movement that has recently been seen as sufficiently legitimate to be incorporated as a division into the American Psychological Association.

Maslow developed a set of psychological constructs that classify a hierarchy of needs along a developmental scale. The scale goes from the survival phase to the ultimate in self-actualization. The first phase, survival, is where the primitive differentiation between self and not-self is made that allows the infant to gain a psychic experience of a self which is different from a world of not-self and thus allows him to gain an identity. The final phase of self-actualization is where subtle and complex discriminations result in synergistic expressions of an identity that can only come about in a cooperative, interdependent environment. The phases are: Survival, Security, Affiliation, Ego, and finally, Self-Actualization.

Environmental influence affects all phases of development. In self-actualizing development, the climate and behaviors in the environment have almost as much to do with the mastery of different phases as do the internal integrations of the environment. For this reason, Maslow's self-actualization hierarchy is presented here in the context of Agazarian's educational motivators* that contribute to resolution and mastery of a phase, fixation within a phase, or regression to a previous phase (see Figure 21).

The most common educational motivators are contingent or coercive. In most classrooms, the climate is one which, at worst, holds the threat of repeated punishment, and, at best, holds out praise. Most people know the story of the carrot, the stick and the donkey, and most people agree that the classroom is no place for the stick. Not everyone knows that the carrot is not necessarily appropriate either (see Figure 4). The locus of motivation and energy is an essential difference in the process of learning conformity versus the process of engaging in personal growth. When the locus of energy is outside the person, as it is when it is located in either a stick or a carrot, the person may continue to produce the required behavior when the motivators are absent, but may not. Even if the carrot and the stick become internalized, the internal motivators are still in terms of reward and punishment, rather than in terms of intrinsic satisfaction.

*Yvonne M. Agazarian, et al., *Documenting Development*, Philadelphia, Humanizing Learning Program, Research for Better Schools, Inc., 1972.

Figure 21: AGAZARIAN'S EDUCATIONAL MOTIVATORS AS RELATED TO MASLOW'S HIERARCHY OF NEEDS

INTERNAL NEEDS	RESPONSE TO SATISFIED NEED	EXTERNAL MOTIVATORS			RESPONSE TO UNSATISFIED NEED
Creativity **Exploratory–Curiosity** SELF-ACTUALIZING	**Person interacts with others and situation, in service of task or goal.** Creative, effective, and interdependent behaviors *results in a* SENSE OF PURPOSE	RESOURCEFUL ENVIRONMENT		**Sharing of appropriate information and skills** *elicits* WORK FOR PLANNED CHANGE	**Independence** *as a defense against* PROJECT ANXIETY
Achievement–Motivation EGO	**Person locates himself in terms of social groups and hierarchy.** Acceptance of social worth of Self and Product *results in a* SENSE OF SELF-WORTH	NEUROTIC	Reward	**Praising** *elicits* WORK FOR APPROVAL	**Reactive conformity or non-conformity** *as a defense against* SOCIAL ANXIETY
Love **Sex** AFFILIATIVE	**Person locates himself in relationship to other people.** Acceptance of self and others as autonomous *results in a* SENSE OF SELF-ESTEEM			**Affectionate behavior** *elicits* WORK FOR LOVE	**Over-personal or counterpersonal** *as a defense against* SEPARATION ANXIETY
Mastery **Control** SECURITY	**Person locates himself in terms of material needs.** Acceptance of similarities and differences in self and environment *results in a* SENSE OF SELF-CONFIDENCE		Punishment	**Threat** *elicits* FIGHT/FLIGHT OR WORK TO AVOID THREATENED PUNISHMENT	**Dependence or counterdependence** *as a defense against* FEAR OF HELPLESSNESS
Identity SURVIVAL	**Person locates himself in terms of own autonomy and body boundaries.** Differentiation between self and not-self *results in a* SENSE OF SELF			**Physical punishment** *elicits* IMMOBILIZATION, FIGHT/FLIGHT OR WORK TO AVOID REPETITION OF PUNISHMENT	**Dependency** *as a defense against* ANNIHILATION ANXIETY

It becomes tremendously important, therefore, to recognize that most accepted teaching behaviors have a one-to-one correspondence with the arousal of certain unproductive, regressive anxieties, even though they may produce the immediate results the teacher seeks. It is one thing to be confident in praise and in the power of love as reinforcers. It is another thing to recognize that contingency approval arouses social anxiety, and that giving and withholding love attacks the feeling of autonomy. Likewise, punishment attacks security and results in coercive, compulsive obedience (or disobedience), and may even attack the very sense of self.

Following is a discussion of the types of behaviors which promote and inhibit growth through each stage of the Maslow hierarchy. Fundamentally important, not only to how we plan curriculum but also to how we plan classroom climates, is identifying the kinds of educational motivators and reinforcers that:

- help resolution of various phases of development
- enforce fixation within a phase of development
- disturb the balance of resolution
- induce regression from a higher level to a lower level

Survival – Mastery of the survival level is characterized by a sense of identity, a sense of the self, of the inner person, a sense of "location" in terms of one's own body boundaries and one's own autonomy and potentiality. Feelings of self (or basic trust), autonomy, and control of impulses are developed in the person when feelings of trust, autonomy and self-control are communicated from the environment. Classrooms which communicate trust and encourage autonomy create a climate in which survival needs are not activated. (This is so in graduate school as well as in the nursery.)

Whenever physical punishment is used, "survival" is threatened. In classrooms where physical coercion is used as the major educational motivator, children may work to avoid a repetition of punishment. For these children, this "obedience" is most often a state of outward passive conformity and inward immobilization. Some children rebel and fight, entering into a vicious circle of disobedience and beatings. Others run away or take flight into fantasy or apathy. Even for people whose threshold of mastery is high for the basic survival level, severe coercion may induce regression to survival responses.

Some of today's psychedelic drug experiences can also result in the activation of survival needs and induce regression. The inner experiences of immobilization, undifferentiated panic states and annihilation anxiety, feelings of being overwhelmed, impairment of the ability to discriminate between oneself and others, fear of being dependent (or fear of being independent), fear of loss of identity, and fear of fusion are symptoms of regression to the survival level.

To regain mastery of the survival level, a person must regain sense of self as a separate identity in the world around him.

Security — Mastery and resolution of the phase of "security" is dependent upon the ability to perceive similarities in the apparently dissimilar and dissimilarities in the apparently similar. Finding similarities in the apparently dissimilar is basic to the process of being able to generalize from the familiar to related but unfamiliar phenomena. Finding dissimilarities in the apparently similar is basic to the process of breaking stereotypes and combating inappropriate judgments or prejudice. This increased quality of perception permits greater complexity of both affective and cognitive responses. The ability to process phenomena of greater complexity opens the way to the confidence that comes when someone can handle new or difficult things efficiently. It also opens the way to confusion when things get out of hand.

Mastery of the phase of security is characterized by a sense of control, both a feeling of competence and also a feeling of being in control. Being in control comes from the person's ability to locate himself in time and place, to know where he is, where he is going and how to get there. The ability to interact successfully with material things is the hallmark of successful mastery of the security level, and entails a successful relationship between self, the situation, and the environment.

Confidence comes from the development of tolerance for frustration, which allows the person to delay acting on impulse and to collect data instead. This, in turn, increases the ability to predict the consequences of an act, which leads to the experience of planning for a reward, of being able to avoid unpleasant consequences of things left undone, and of being able to enjoy the pleasant consequence of things well done.

Mastery of the security level permits increased toleration for new situations. The unknown and novel loses some of its fearfulness. New discriminations are possible in "cognitive" maps. At the affective level, the discrimination between the thought, the feeling and the act allows the person to take responsibility for what he *does*, rather than feeling guilty about what he *thinks* or how he feels.

Mastery of the world at the security level is obtained in much the same way that mastery of a puzzle is obtained – by taking it apart and putting it back together. Mastery of the security level is encouraged in classrooms which promote experimentation, where discriminations are made by the manipulation both of objects and of symbols, where integrations are achieved through comparing and contrasting things at both the concrete level and the abstract level. In an environment in which the student is both safe and encouraged to be curious about the world and how it is put together, mastery over the material world is gained and children grow.

When, however, the environment is coercive, and threats are used to inhibit exploratory behaviors attempts to explore and master the environment give way to a need to stay secure in it. Safety in a coercive classroom can be obtained by doing as the teacher says to do: behave, conform to certain rules, and conform to the impersonal demands to produce

certain behaviors. The teacher thus sets himself up as the "control" against which a student will either conform or rebel. In a coercive environment children learn rules rather than subject matter.

Activating the need for security impairs the process of mastery. Fears of helplessness and being out of control re-emerge. Defensive reactions like dependent, compulsive obedience or its reciprocal, compulsive counter-dependent rebellion are aroused. Neither of these reactions is in the student's best interests; both are reactive rather than proactive.

Coercive climates are punitive climates, and punitive climates arouse punitive feelings. For some, these punitive feelings are turned in on themselves, manifested in apologetic, humble, submissive posture that is intended to inhibit attack. In fact, a submissive posture does inhibit attack in the animal kingdom but is more likely to provoke it in the human culture. For others, the punitive feelings are turned into scapegoating. The beaten beat others.

The teacher who gains conformity by threats to the security level creates a need for an authoritarian figure to maintain order at all times. The class is "good" when authority keeps it in order," disruptive and destructive as soon as the teacher's back is turned.

In adults, as well as children, fears of security appear from such real or symbolic threat. When fears of standing up in front of the class or speaking out at a convention are activated from the security level, they are not "rational"; they have more to do with feeling safer if unnoticed and vulnerable when in the spotlight than they do with the ability to perform well. Sudden pangs of fear of failing in school or on the job also have more to do with the activation of security needs than they do with the likelihood of failing.

Flight into the status quo is the refuge of those whose threshold of security is low. The "unexpected" or the "new" is equated with danger because exploration has been inhibited. Security conscious people develop a hatred of change and a willingness to tolerate the status quo, however unpleasant, rather than risk the unknown. Fixation at the security level, however, can only be partially claimed when maintaining the status quo and possession of *things* become part of a ritual defense against regression to survival anxieties in which identity itself is at stake.

This kind of security is a central issue in the current rebellion against materialism. The American way of life can be portrayed as mobilized around material rewards in which men work in order to buy things. The American dream is said to have come true in today's housing developments and two car garages. To the extent that providing security becomes a goal in itself, rather than one of the factors that expands the kinds of goals that can be set, then life has been organized in terms of a defense against fears of insecurity. Protection rather than growth is the watchword.

Affiliation – Mastery of the affiliation phase of development is dependent upon the ability to differentiate between oneself and others, to perceive individual differences and to relate appropriately to different roles.

Successful fulfillment of the need for affiliation is reflected in interpersonal love, affection and sex. The person secure at the affiliation level is the person who can locate himself in relationship to others and respond appropriately. Successful interpersonal relationships build feelings of adequacy, or self-worth, and feelings of being a whole person.

The need for affiliation is fulfilled when there is a climate that communicates acceptance of people as autonomous, different, and resourceful or "special" in their differences. In a climate that supports a person to be a person, people work together in trust, openness, cooperation and reciprocity.

However, using "love" or esteem as a way of controlling or persuading backfires and is likely to activate the need for affiliation. When love becomes contingent on certain kinds of performance, when giving and withholding love becomes part of a reward and punishment system, fear of loss of love is aroused and fear serves as a motivator. Counterpersonal defensiveness (the denial of a need for affection from others) or overpersonal defensiveness (where demonstrations of affection become essential) are reciprocal reactions to an unsatisfied affiliation need.

Teachers who use the giving and withholding of love as motivators may get rich results in terms of "loving" students, and even excellent performance, but they impoverish the student's sense of autonomy. This results in students who can only produce for teachers they like, and whose functioning becomes contingent on a warm personal relationship.

Whereas coercion at the security level can result in producing the behavior the teacher wants, coercion at the affiliation level can result in a student trying to *be* what the teacher wants. Learning in this case is only incidental.

Ego – Mastery of the ego level frees a person to act because he chooses to, not because he needs to. This in turn paves the way for satisfaction in doing, which is part of actualizing self.

Mastery of the level of ego needs is dependent upon the ability to differentiate between who one is and what one does. Discrimination between the *I* and the *Not I* demands the recognition that what someone produces is an external, independent product coming from within but, once formulated, no longer part of oneself. Basic to mastery at the ego level is the ability not to take things personally, the ability to objectify and to evaluate personal production without feeling that one's self gains or loses value.

A sense of social acceptance is also a function of ego mastery. Being able to locate one's place with a sense of belonging to social groups and the cultural [illegible] and hierarchy are hallmarks of ego satisfaction. The ability to set goals of status with an understanding of the means of reaching them also demonstrates mastery (and therefore choice) at the ego level. Achievement motivation, goal setting, and problem solving are ego level functions.

When the classroom climate is such that achievement is rewarded with appropriate social recognition, a person is able to get the feedback that provides him with social validation because his products gain rewards that give him extrinsic satisfaction. This kind of environment provides feedback that tells the person that the behavior that make sense to him also make sense to others. In this climate, striving becomes worthwhile effort and the desire to achieve flourishes. In this climate, impulse control is rewarded. In this climate, the problem-solving skills, mastered at the security level, gain social, as well as material rewards, and the autonomy gained at the affiliative level leads to social recognition, self esteem, and interpersonal fulfillment.

Ego anxieties can become mobilized when praise of the person (not the product) is used as the major motivation for production. Praise of the person can be coercive; it competes with the pleasure that comes from successful problem-solving activity. Praise threatens autonomy, encourages rivalry (even in a cooperative situation), distracts the student from what makes sense to him and seduces him into paying attention to what makes sense to the teacher. When compliance rather than successful problem solving is rewarded by status, then ego anxieties become mobilized and progress stops. Self-doubt, fears of inadequacy, fears of falling from grace stimulate needs to conform to expectations the student attributes to the teacher. Producing what the teacher wants rather than what the student wants to create is one symptom of lack of ego mastery. Working for grades is a symptom. When students work to produce "A's," they are working to satisfy the system rather than the education which the system was designed to provide.

Sometimes, when ego anxieties are aroused, nonconformity and antisocial behaviors appear along with the denial of any wish for approval or any need for acceptance. Instead, inappropriate demands are made upon others to conform to the student's expectations or values. Oversocialized and antisocial behaviors are inverse reactions to the same stress.

When the need to achieve is mobilized more strongly than the need for approval, and competition becomes subordinated to situational mastery, the self-esteem no longer becomes dependent upon praise and is relocated in the acceptance of one's own reality testing of appropriate behavior. Self-validation (what makes intrinsic sense to me) becomes congruent with social validation (what makes sense to others) which permits the setting up of extrinsically rewarding goals.

Self-actualization – People functioning from the level of self-actualization tend to be [illegible]ented; problem-solving, creative, and productive. They are experimental and operational [illegible] through insight and through trial and error learning.

Mastery at this level, from which Maslow's hierarchy takes its name, is dependent upon a [illegible]perative harmony between the various levels of need within the individual (independent self-actualization) and between people (interdependent self-actualization). Self-actualization is a function of synergistic innerpersonal and interpersonal relationships.

Synergy within a person is the product of inner dynamic harmony between the levels of need. All of us have internal flickers of discomfort caused by our real (or imagined) coercive environment. The world is full of unhappy people and unhappy people produce unhappiness around them. Inner self-actualized people are aware of this but their equilibrium is not disturbed and caught up in it. They are at peace with themselves. They are not passive or aloof but rather very aware and this awareness permits the perceiving of conceptual relationships between ideas and things to be in the service of exploratory curiosity rather than bondage to an unsatisfied need.

Unspoiled by negative, limiting cultural coercion, people remain as curious as little children all their lives. As of this writing, our schools tend to do more to destroy that natural curiosity than to preserve and encourage it.

Synergy between people has a pay-off that is different from what either one can produce alone. When relationships are characterized by synergistic interdependence, people interact with others and the situation, not only in the service of themselves, but also in the service of others and the situational objectives.

Self-actualization is encouraged in a climate of trust and openness, where appropriate information and skills are shared, and personally and socially validatable responses that make possible a system of negative entropy are generated. In closed, suspicious or strategizing climates, self-actualizing creativity is inhibited and inhibition is manifested by frustration at external or internal limits.

Regression from the level of interdependent self-actualization is not to the ego or affiliative levels but to independent self-actualization: the social hermit. At this level, the independent being is less than the interdependent being. It is from this level that social synergy dies and from this level that it is reborn. Fulfillment at the interdependent level is rare. Social environments supportive of actualized interdependent relationships are seldom available over extended periods of time.

More likely is fulfillment at the self-actualized level by "peak experiences" that are unusual high spots rather than a way of life. Rarely are people in synergistic relationship to themselves, thus rarely do they peak even into the level of independent self-actualization.

Where common is the struggle to keep the regressive trends from being triggered by a coercive environment. Even when people are skilled at keeping their ego, affiliative, security and survival needs fulfilled, satiation frequently becomes a goal in itself. Gratification makes for homeostasis at the expense of growth, and the next step is not taken. And herein lies a potential tragedy.

In the short time between the first edition of this anthology and this one, humans have left the earth alive, walked on the moon and returned. Three different sequential teams of humans have "lived in space" for weeks on end. The "hard science" progress that made those next steps in the evolution of mankind possible are now history. And what is one of the greatest problems faced by this man-into-space effort? It is not life support systems, or power control (those systems functioned fine), but rather the lack of techniques for maintaining effective, long-term, harmonious interpersonal relations over the extended time these men lived together. Competent independence is not enough.

It is the actualization of human cooperative interdependence that the constructive future of man lies. And thus this new edition. The world and its resources do not diminish. If anything, it increases* and mankind's progress in the physical sciences has brought affluence to many at levels undreamed of a century ago. That affluence has increased at an exponential rate through the 20th century. Its continuance into the 21st, we believe, will require similar progress in the social sciences. Humans, in the heritage of their various cultures, now possess awesome power. In a technologically shrinking world, the social utilization of that power for the optimum benefit of any one man or any one man's culture increasingly requires the active, mutually-benefiting cooperation of other men and their cultures. Affluence in self-actualized terms is a cooperative venture.

*For insights into the economics of synergy in the physical sciences, see almost any book by Richard Buckminster Fuller and particularly *Synergetics: Explorations Into the Geometry of Thinking*, as of this writing scheduled for publication by McMillan & Co. in February 1975.

NOTE

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Section Four. Bibliography.