Low Performers' Manual

Siegfried
Engelmann

Warning: Some of the techniques described in the *Low Performers' Manual* would not be permitted in some districts.

Make sure you obtain necessary approval before you institute any parts of the program that may be in conflict with district rules, regulations, or state laws. A good idea is to either be monitored or taped, particularly when you work with out-of-control, seriously noncompliant learners.

Contents

Introduction

This manual is divided into four sections, each of which deals with a different level of specificity.

Section I deals with more traditional issues — the use of behavioral objectives, procedures for diagnosing the learner, and the broader specifications of what to teach. For the person who is confronted with a low performer and who is frustrated by trying to figure out effective techniques for changing the learner's behavior and maintaining gains, the information provided by Section I is of only oblique interest.

However, the issues discussed in Section I affect the teacher. The teacher may be required to specify behavioral objectives, required to keep records of the learner's "progress." Individualized programs based on the learner's "strengths" and "weaknesses" may be required. Do the specification of "behavioral objectives" and the use of IEP's (individual educational plan) lead to intelligent programs? The answer is "no" in many cases, but how does the teacher make this point, or how does the teacher demonstrate this point? How does the teacher avoid becoming enmeshed in irrelevant words? The purpose of Section I is to outline a case for intelligent use of behavioral objectives.

Section I also outlines a different kind of diagnosis, one that evaluates the *instruction the learner has received* rather than an evaluation of the learner's "aptitude," or "potential." The educational diagnosis, while being objective and based on observables, moves from the standardized tests to the instructional setting—the only reliable source of information about what the learner is being taught. The point of the diagnosis is basic, but has been ignored by most traditional approaches. *We can make valid statements about the learner's potential only if we first rule out the possibility that the learner is perfectly normal and reasonable and that her responses are caused by the instruction she is receiving*. The viewpoint espoused by this manual is that the learner is innocent of being "deviant" unless we have compelling evidence to the contrary. The only diagnosis that we deal with, therefore, is educational—controlling those variables that can be manipulated by the teacher. We do not deny the facts of a handicapping condition. We deny the cause, however. We do not conclude that the poor performance is the *fault* of the learner. Rather, we assume that the learner is capable of learning skills if the skills are presented properly, and that the learner will respond in a predictable manner.

Section II specifies the basic techniques the teacher must use to work efficiently with low performers. This section does not specify the steps for teaching the learner how to discriminate between objects such as a cup and a pencil, nor does it specify what you would say, how you would correct the learner for pointing to the wrong objects, or what you would do if the learner's attention waned. Section II provides general guidelines for different behaviors, basic procedures for setting a schedule, the general rules for pacing an activity, and guidelines for using reinforcement and punishment. It explains why corrections are important and it presents a model or a set of procedures for correcting mistakes. Section II outlines the need for a "shill," a person who prompts the learner, and tells when and how a shill is most effectively used when working with low performers.

If your primary goal is to find out procedures that work with low performers, study Section II. Although it doesn't provide you with a "program" for teaching specific skills, it alerts you to the teaching details or variables that you *must* control if you are to be effective. There are no good teachers of low performers who have poor pacing. What this means is that if your pacing is poor, an otherwise effective teaching sequence fails. Pacing is important. So are reinforcement, scheduling, and the other program-related details discussed in Section II.

Section III begins with procedures for diagnosing the learner so that *specific instruction is implied*. The testing procedure described in Section III provides information both about the learner's basic skill level and about the learner's behavioral adjustment. It provides information about whether the learner has strongly engrained "routines" that are used to control people or whether the learner is fairly "cooperative."

Section III also provides specific programs for teaching skills the lower performer typically has not mastered (such as how to respond to simple commands: "Come here." The learner may not be able to discriminate between objects and may fail tasks such as, "Touch the ball." The learner may not respond to praise and other social reinforcers. A "program" may be needed to achieve motivation, attention, perseverance, or improvement in rates of responses. Typically, the low performer does not know the meaning of the words *yes-no*, and a very carefully designed program is needed to teach the learner how to respond appropriately to these words. Also, the learner may have limited information about the names of things. Again, a program is implied for teaching these names.

Programs are specified in Section III. They indicate precisely what types of responses are expected from the learner, and what to do if any special corrections are needed. There is a brief rationale for the design of each program and cautions about the parts of activities that must be firmed; however, Section III primarily tells *what to do*. The programs, if followed, will work. They assume, however, all the skills articulated in Section II.

Section IV deals with the teaching of new motor responses. These are responses that the learner has never produced before. Often, the very low performer has speech problems. Perhaps she is non-verbal. Other motor skills that must be taught often include tying shoes, brushing teeth, walking, sitting up straight, eating with a spoon, etc. Section IV does not provide detailed programs for every motor skill that might be taught. Instead, it provides fairly precise rules about how to analyze a complex motor response and what your options are for designing a step-by-step program that will teach the skill. These options include the use of *shaping*, designing a *simplified application*, and possibly the use of *prompts*.

Why the Low Performer is More Difficult to Teach

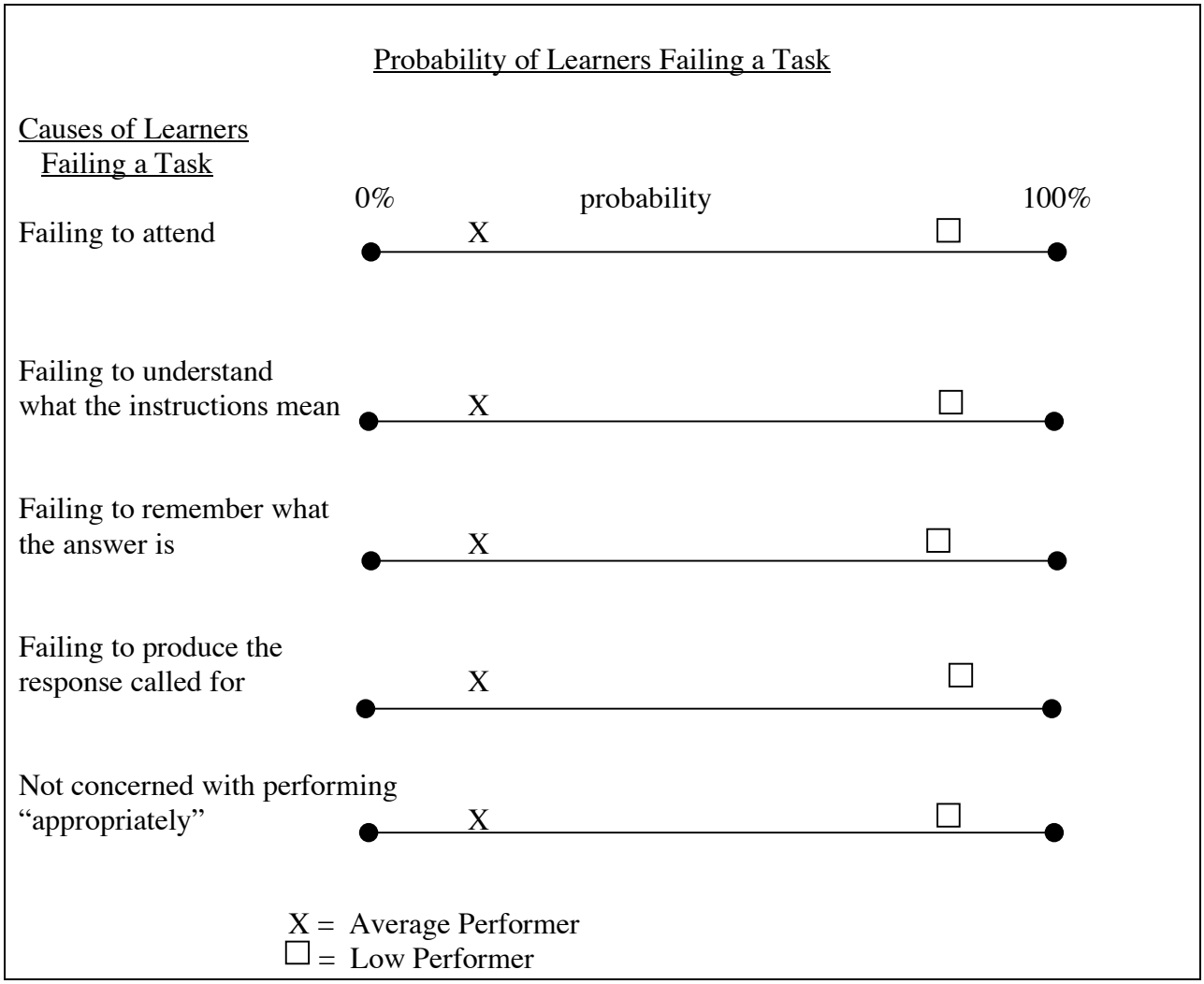
A word of warning to any teacher of the low performer: the minimum level of teaching skill that will *succeed with the average performer* will *fail with the low performer*. If a teacher with insufficient skills works with a low performer, a cycle of failure and false conclusions follows. The teacher does his best and the learner fails. If the teacher had done certain things differently, the learner would not have failed. However, the teacher doesn't know this fact; therefore, the teacher sees his best efforts resulting in failure. The teacher falsely concludes that the learner is

at fault and that she is unteachable. The *behavior of the learner supports this conclusion*. Indeed, the learner does not learn, providing the teacher with evidence that the conclusion about the learner's incapacity was correct.

Do not accept current practices as a standard of what can be done to teach low performers—even the standards set in programs that provide a great deal of rhetoric about the effectiveness of their approaches. Current practices are, for the most part, unenlightened and primitive. Remember that the failures you will observe in most programs may not be failures of children *but of teachers*. The only way to receive evidence of what can be done is by applying a great deal of teaching skill when working with the low performer. (Keep in mind that the amount of skill typically observed is hopelessly insufficient for the magnitude of the job.)

The diagram below shows why the low performer is harder to teach than the high performer. Note that this is not a statement about the learner's potential, merely about his current status — what he knows and his responses to learning situations.

Figure i.1



The diagram shows that the low performer is not nearly as perfect a receiver of information as the average performer. The lower performer has a poorer memory, less interest, and less knowledge. The probability is high that the average performer would know the meaning of instructions such as, "Look at this." The low performer, however, may fail the task ("Look at this.") simply because she doesn't know what the instructions mean.

Teaching the average performer implies presenting information clearly and with enough practice to assure mastery or habitual performance. To teach the low performer, we must control more details of instruction.

We must *compensate for the learner's poor memory*. We must use techniques that *secure attention*. We must be very careful about *pacing*. And we must *teach skills that aren't required when we work with the higher performer*. Note that these are additions. We are not relieved of doing anything more poorly than we would with the average performer. Rather, we must do a great deal more. Don't ever forget this fact if you want to become an efficient teacher of low performers. The less the learner knows, the more difficult the teaching is and the greater the amount of skill the teacher must have.

The Program for Low Performers

The kind of low performers this manual primarily addresses are young children (ages 3 to 7 or 8) who have a low IQ (70 or lower), those who are noncompliant, and those who are seriously autistic. All would be placed in special classes for the seriously language delayed or mentally retarded. The behaviors of these children imply why effective teaching for them is greatly different from that which is appropriate for higher performers.

1. The low performer cannot start in a beginning language program because he lacks skills needed for even the first lesson.

2. The low performer has behaviors that interfere with instruction.

3. No two low performers have the same set of skill deficits or behavior problems.

The goal of instruction for the low performers is to provide them with the skills needed to start learning from packaged programs in reading, math, and language. To reach this goal the teacher must start where each learner is, work with them individually on the various skills and behaviors they need in order to work in a group, to follow basic instructions, and to comply with the directions the teacher gives as she instructs them.

The biggest difference between teaching lower and higher performs has to do with the pattern of interactions between teacher and student. For children who have abilities to start a basic language or reading program in kindergarten, the teacher is able to follow a script because the interactions between teacher and children are fairly predictable. The teacher knows what she will do next and about how much material she will cover during a period of a specified duration. Certainly, the teacher will have to respond differently when the children produce a correct response and when they make a mistake. Even if children make a mistake, however, the script

tells the teacher what to say and specifically which part of the script to do next. When working with low performers, the teacher knows what she will do first, based on what the child did during the last session. The next step depends completely on what the child does, but what the child does is not nearly as certain as it would be with a higher performer. Therefore, the teacher must have guidelines that apply to any example—strategies for how to respond to anything the child does. The teacher may have to change examples, may have to return to earlier formats or tasks, and may have to review examples that the child mastered earlier, or may have to deal with noncompliant behavior. The learner may have forgotten what the teacher assumed was "mastered," may not attend to the presentation, or may respond to tasks in a hesitant manner. The teacher who succeeds in preparing this child knows how to evaluate whether the child is actually trying, what he apparently knows at this point, and how to correct the variety of mistakes he makes.

The purpose of this manual is to provide information about the technical details the successful teacher needs. Some of this detail has to do with attitude and expectations. Most detail has to do with the instructional sequence that transports the learner from his current level of performance to that required to work in a beginning language and reading program. Unlike other programs, the one for the low performer can't be as specific about all the examples that are appropriate for a particular child or the amount the learner will be expected to master in a particular period of time. Rather it outlines the steps the teacher needs to take, with as much specificity as possible.

The manual indicates the types of examples that are needed for a particular task, the procedures that the teacher is to follow, the statements the teacher is to say, and the criterion of performance required before the teacher moves from one step to the next. The manual also indicates the kind of classroom setup required for particular instruction and the correction procedures.

The first part of the manual presents information about the logic of establishing objectives and assessing the learner's performance. Chapters 1 and 2 are not totally essential for the teacher to understand, but they suggest why current practices used with low performers are naïve. The material from Chapter 3 to the end of the manual provides essential information.

SECTION I

Chapter 1
Logic of Misrules

Behavioral Objectives

Our only measure of whether the learner is "taught" is the learner's *behavior*. It would seem to follow that we should express instructional goals, as *BEHAVIORAL OBJECTIVES* that tell what kind of performance the learner should exhibit after instruction. The problem is that although a behavioral objective indicates *one* behavioral outcome that is desirable, the objective doesn't tell about other behavioral outcomes that are related to the original objective. The objective doesn't imply how to achieve the outcome in a way that is consistent with the other outcomes. The result may be the teaching of one objective that interferes with the attainment of other objectives. This chapter explains why behavioral objectives that are not adjusted to account for other possible objectives are very weak and potentially dangerous.

The educational literature and recent legislation suggest a great faith in behavioral objectives. Unfortunately, behavioral objectives do not uniformly lead to effective instructional programs. Rather, they represent a first step, and a good one. The primary evil they overcome is that of expressing outcomes in untestable terms. The goal: "I want my students to know how to think," is not behavioral. The objective should express *precisely* how the student will be changed. What will he be able to do that he can't do now? How will we know that he is "thinking"? Perhaps we express the thinking as: "The student will point out contradictions in a passage of 200-300 words, written on roughly a fifth-grade vocabulary level." The objective is now acceptable; we know what the stimulus context is and how the learner is to respond to the context.

Although behavioral objectives are valuable starting points for identifying end-produce behaviors, they don't readily translate into a program. They translate into *tests*. The typical instruction therefore is a series of "tests" with no provisions for teaching. If the objective has to do with identifying a sequence of events, there is no attempt to "teach" specific discriminations or procedures. Rather, the program provides a series of "test" problems that are highly similar to the problem described in the objective. The supposition is that by working these problems and receiving feedback, the learner will learn the concept to identify the sequence of events.

Behavioral Objectives Frequently Lead to Stipulation Misrules

Stipulation occurs when the learner is presented with a very narrow range of examples, but is later expected to deal with a broad range of examples. For example, if the beginning reader works for a long period of time on 3-letter words, the learner may later have difficulty when dealing with 2-letter words and 4-letter words. *The longer the learner works on the initial set, the greater the probability that the learner will later have trouble, and the greater the amount of trouble the learner will experience*. The 3-letter word set is consistent with the interpretation that the basic decoding process used for 3-letter words also applies to other words. Unfortunately,

however, the set also implies the undesired stipulated misrule: The reading code applies *only* to 3-letter words.

Stipulation is a very real, predictable outcome. If the initial teaching of fractions deals with fractions that are less than one whole and that have 1 as a numerator, the set stipulates that being less than one and having 1 as a numerator is a feature common to *all* fractions. Since this interpretation is implied by the set of examples, some learners will pick it up and later have trouble with fractions such as $\frac{2}{3}$ or $\frac{7}{4}$.

If we base programs on behavioral objectives, we will finally create serious stipulation misrules: Here's why:

1. Each objective is assumed to be independent (or largely independent) of other objectives.

2. Both the stimulus context and the response specified in the objective occur in other possible objectives.

3. If we design a program based on one objective, we will not show the range of the context or the response; *therefore, the teaching will stipulate a narrow application of the context, the response, or both.*

As noted earlier, behavioral objectives are not bad. They are a good starting point. They are bad only when they are treated as a direct passage to instruction. Behavioral objectives *do not imply a program*. The role of the behavioral objective is to provide the instructional designer with a statement of one of the things the learner is to be taught. Before a final sequence or a program can be further developed, the objective must be corrected or adjusted by showing its relationship to other objectives.

<u>Diagramming the Relationship Between Stimulus Context and Response</u>

One helpful procedure for relating the stated objective with other objectives is to create a diagram showing the interaction between the stated objective and related objectives. The diagram consists of two circles — one representing the *stated stimulus context* in which the response occurs, and one representing the *stated behavior*. We then ask two questions, one about the stated context and the other about the response. The answers to these questions tell us how much of the diagram to shade. If the stated objective is appropriate (implying no potential conflict with other objectives), the entire diagram will be shaded (or nearly all the entire diagram). If the relationship between the stated context and the stated response is unreasonable, part of the diagram will be unshaded. The greater the unshaded area, the greater the danger of pursuing the stated objective without considering related objectives. Large unshaded areas may also imply that the stated objective suggests an inappropriate teaching approach.

To construct a diagram, we ask these questions about the context and response described in the objective:

1. Would we reasonably expect the learner to produce *other responses* in the context?

2. Would we expect the stated response to occur in *other contexts*?

If the answer to question 1 is: "Yes, we would expect the learner to produce other responses in the stated context," there must be an unshaded area in the *context circle*. This empty space is needed to accommodate the other possible responses. (If other responses are reasonable in the stated context, show empty space in the context circle.)

If the answer to question 2 is: "Yes, we would expect the stated response to occur in other (unspecified) contexts," we would show empty space in the *response circle*. This empty space is needed for the other contexts in which the response is expected to occur. (If the response is not limited to the stated context, show empty space in the response circle.)

Note: If we can think of only unimportant or rare situations in which the context would accommodate other responses, we would show a small space in the context circle. On the other hand, if the context should support a wide variety of other responses, we would make the space in the context circle quite large. Similarly, if the response occurs rarely in other contexts, we would show a small space in the response circle; however, a response that is expected to occur in a variety of contexts would have a large empty space.

Below are the four basic types of diagrams:

Figure 1.1

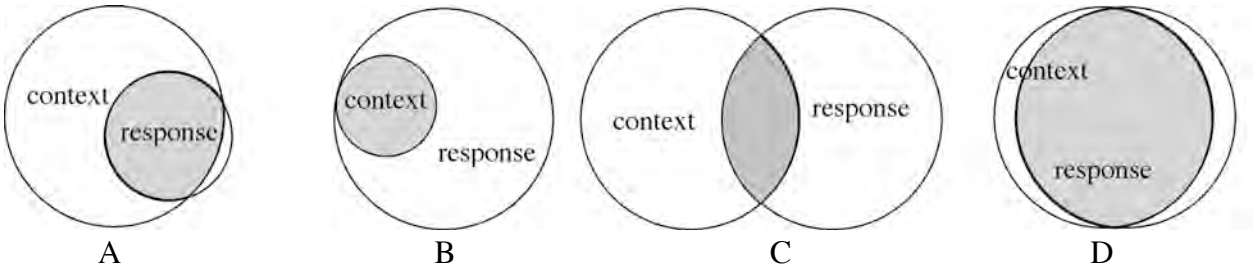


Diagram A would be drawn for objectives such as: "The learner will solve long division problems of the form: $00\overline{)0000}$."

What is the stated context? The problem.
What is the stated response? Solving the problem.

Question 1: Would we reasonably expect the learner to produce other responses in the stated context? Yes, reading the problem, writing the problem as a fraction, inverting the problem, etc. These are reasonable responses for the context. We expect other responses in the context; therefore, part of the context circle is unshaded.

Question 2: Would we expect the stated response to occur in other contexts? Not really. We wouldn't expect the learner to produce the response of solving the problem if the problem isn't present. The response of solving the problem probably would not occur in any other context. Therefore, there is no significant amount of space in the response circle.

Diagram B would be drawn from an objective such as: "The learner will turn a somersault in response to the command, 'Turn a somersault'."

What is the stated context? The command, "Turn a somersault."

What is the stated response? Turning a somersault.

Question 1: Would we expect the learner to produce other responses in the stated context? No. When told to turn a somersault, we wouldn't consider many other behaviors appropriate. Since the stated response is the only one that we would reasonably expect, the context circle shows no empty space.

Question 2: Would we expect the stated response to occur in other contexts? Yes. We would certainly hope that the learner produces somersault responses at times other than when the instructor says, "Turn a somersault." Since the response extends to contexts other than the stated one, there is empty space in the response circle.

Diagram C is appropriate for objectives such as, "The learner will turn a somersault on the gym mat." The context is the gym mat. The response is turning a somersault.

Question 1: Would we expect the learner to produce other responses in the stated context? Yes. In the context of the gym mat, the learner would be expected to lie down, sit, turn, roll, jump, etc, on the mat. Therefore, the context circle shows empty space.

Question 2: Would we expect the stated response to occur in other contexts? Yes, we would expect the learner to produce somersaults on the lawn, on the floor, on a bed, etc. Therefore, there is empty space in the response circle.

Diagram D is appropriate for objectives such as: "The learner will cross the street only if no vehicle is coming." The context is the street to be crossed. The response is the conditional act of crossing the street.

Question 1: Would we expect the learner to produce other responses in the stated contexts? No, not if we understand the context. The learner is confronted with a street that is to be crossed. This street is the context. Do we expect the learner to produce responses other than crossing? Probably not. We don't want the learner to sit in the street, bounce a ball in the street, or do anything other than cross it. Since other responses are not expected in the context, nearly all of the context circle is shaded.

Question 2: Would we expect the stated response to occur in other contexts? No. Actually, however, the response is not fully "stated." We suppose that the learner first looks to determine whether a vehicle is coming and then crosses if none are coming. We would not expect this kind of behavior to occur in most other situations, such as crossing the lawn, the room, and the hallway. The response occurs only in the context of street crossing (or railroad intersection crossing). Therefore, the unshaded area for the response circle is very small.

Dictating Instruction

Behavioral objectives are dangerous only if we assume that they imply or dictate instruction. If we assume that they are criteria for evaluating a particular program, the behavioral objectives are useful. They provide a checklist of skills and behavioral changes that should be achieved by an instructional program.

The situation is quite different when we assume that behavioral objectives imply instruction. Three of the four diagrams show that instruction deriving directly from a single objective could be dangerous (and probably unwise). **The only diagram that could safely be translated into instruction is diagram D,** nearly all of which is shaded. The large unshaded areas in the other diagrams indicate the areas of potential danger.

1. Misrules Associated With Diagram A

This diagram shows that we expect the context to support various responses, not merely the one specified in the objective. If we follow the objective and fail to teach other responses within the specified context, we will imply that the context permits only one kind of response.

For example, if we always require the learner to operate on the numbers $24\overline{)749}$ the same way, the learner may pick up the misrule that the particular problem signals a particular chain of behavior. Instead of teaching an intelligent cognitive strategy, we may teach the learner to behave like a rat in a familiar maze. The learner may indeed have trouble later, when he is expected to deal with this problem as a "fraction" $\left(\frac{749}{24}\right)$.

There are many illustrations of this type of misrule (which is induced by reporting a limited response). For example, many people presented with this problem would be able to solve it for *x*:

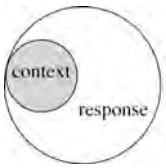
$$3x + 7 = 28$$

They might have considerable difficulty, however, solving it for $\frac{2}{3}$ *x*. The problem is actually the context for these and many other possible solutions or "responses." Typically, however,

students have been taught only to deal with a limited set of responses. For them, the context signals one chain of behavior.

Diagram A implies dangerous misrules if the context is not available to the learner in a variety of situations. If the context is readily available to the learner, the learner will probably discover that different responses are possible within it; however, if the context is not readily available outside of the formal instruction situation, the learner will probably *not* learn about the other types of response manipulation.

2. Misrules Associated with Diagram B

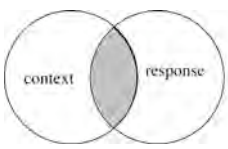


This diagram shows that the response is supposed to occur in contexts other than the specified one. Therefore, if we teach to the objective, we limit the response to the context and stipulate that the response is to be limited to a particular situation or context, although the response should actually occur in a variety of other contexts. In reality, serious misrules associated with objectives diagrammed as B occur only if the other contexts are obscure or inaccessible to the learner. For example, if the learner has been taught to count to ten, and if he had received reinforcement for performing this response in the context of the command, "Count to ten," the learner would probably count to ten as part of the a routine in which he talks to himself. This context — doing it by yourself without waiting for the signal from the teacher—is readily available to the learner.

A special problem occurs when the learner is being retaught particular skills. For example, if the learner is a "corrective" reader or is "dyslexic," he has learned to avoid reading in particular situations or contexts. If he is retaught to read accurately in a classroom situation with a particular set of books, he may *not* generalize the new reading behavior to other situations or other books. In a sense, these other contexts are not readily available because he has already acquired incompatible behaviors with respect to them. The program must not assume that the responses will generalize. Conversely, the program must provide for the systematic application of the accurate-reading skills to these situations.

Diagram B often implies that the objective creates an artificial or non-functional context. While the context of the command, "Turn a somersault," is functional when teaching the learner to *discriminate* between different actions, such as standing still, turning a cartwheel, lining up, etc., it is of extremely limited value when teaching the *response* of turning a somersault. The objective, as stated, may direct the design emphasis from the teaching of the response to the teaching of a discrimination. "You're going to turn a somersault. What are you going to do?" The learner would not be one iota closer to the relevant behavior of turning a somersault after performing on this task.

3. Misrules Associated With Diagram C



The diagram that shows both the context and response specified in the objective has important roles beyond those stated by the objective. The context should actually be associated with a variety of other responses and the response should occur in a variety of other contexts. *Although the stated objective may be perfectly legitimate as a single objective, it is not legitimate unless there are other objectives to correct for the unshaded areas shown on the context side and on the response side of the diagram.* A program must be specified. The objective, "The learner will read a 10- to 12-word sentence and answer a *who* question," specifies a very restricted context and only one of the many possible responses we would expect of the learner. Diagram C demands that the stated objective *must* be considered as one of a group of objectives before we can make an adequate appraisal of the possible misrules implied by the proposed program.

Most of the objectives stated in IEP's or in lists of "behavioral objectives" would be diagrammed as C above, which means that those objectives are preposterous in isolation and must be considered as part of a program.

4. Misrules Associated With Diagram D 

If the unshaded area is relatively small on either the context or response side of the diagram, the objective, as stated, does not suggest serious misrules that would result if the instruction were designed to teach what the behavioral objective states. Since the statement in the objective has specified virtually the full range of situations in which the response is to occur and has also suggested the full range of responses that will be expected within the context, the objective may be taught as stated without extensive reference to other objectives.

Diagram D usually implies that the objective deals with relatively simple motor behavior. If the behavioral objective is *not* elaborate and the diagram shows little unshaded area, the program probably implies conditioning the learner to respond to very specific cues with invariant behaviors. Screwing screws, responding to the fire alarm, working on a production line, obeying traffic rules, following non-symbolic directions, etc., are the only objectives that can frequently be acted on without reference to other objectives. If a cognitive strategy or operation were expressed in behavioral terms that appropriately framed the context and response, and could be diagrammed as D, the objective would contain many qualifications, many *or*'s and *and*'s and much detail. For important strategies, the objective might be pages long. This fact suggests that such strategies should not be expressed as objectives, because the objective requires the designer to show how the single objective *reflects the entire program.* The designer could more efficiently *diagram the program* so that the objective is appropriately framed as part of the program. (The fully specified objective of a cognitive strategy would show the *program* as a feature of the objective, which is somewhat inside-out in orientation.)

Summary

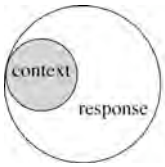
The behavioral objective is a starting point. It must be considered in relationship to other objectives. To illustrate the relationship of a particular objective with others, begin with the objective. Use circle diagrams to show the amount of unshaded area there is for the objective's context and response. The diagram shows two relationships. The first is the extent to which a stipulation would result if we based a program on the objective without regard to other objectives. The second relationship is between the diagram and the correction needed to avoid the stipulation misrule.

A

a) A program based on the diagram would *stipulate* that a particular response is exclusively used in the context when many responses are appropriate in the context.

b) The *adjustment* required would be to introduce other responses in the context stated in the objective.

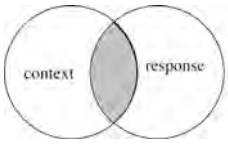
B



a) A program based on the diagram *stipulates* that a response should occur only in a particular context when the response is appropriate in a broad range of contexts.

b) The *adjustment* required would be to introduce other contexts to de-emphasize the context, to provide for reinforcement across a wider variety of contexts, etc.

C



a) A program based on this diagrammed objective would be guilty of great *stipulation* with respect to both context and response. In reality, the context interacts with other responses and the response is used in a variety of different contexts.

b) To adjust for this range of stipulation, a program is required to show how the original objective relates to other objectives involving the context and the response. The diagram implies that it is virtually impossible to deal with the specified objective without seeing how it fits into a sequence.

D

a) The objective associated with this diagram is not seriously guilty of stipulation on the side of the stimulus context or the side of the response.
b) Therefore, the stated objective can be safely used as the basis for constructing an effective program. There is no particular need to "relate" the context or the responses to other things the learner would be expected to do. If the objective is stated in fairly simple terms, the teaching implied will probably be a single "systematic sequence of exercises."

Chapter 2

Deriving Instruction from Behavioral Objectives

Figure 2.1

Only behavioral objectives that are diagrammed so that there is a high correspondence between context and response (shaded space) and very little unshaded space lead directly and safely to instructional programs. If objectives diagrammed with large unshaded areas are "followed" without regard to other objectives, serious misrules and stipulations may occur in the resulting program. However, it is possible to derive sensible programs from objectives diagrammed with large unshaded areas. Here are the steps:

1. Diagram the objective.
2. Adjust the diagram by indicating necessary additions to the context or the response circles.
3. Formulate a new objective that is consistent with the adjusted diagram.
4. Treat the new objective as a task and analyze common behaviors.
5. Teach to the new objective.

1 – Diagramming the Objective

Let's say that we start with this objective: "Diane will put her things away at 2:30." What is the context? 2:30. What is the response? Putting things away.

To what extent would the learner be expected to produce other responses in the context of 2:30? Hopefully many. On Saturdays, or even on days when the "rules" are changed, we would expect Diane to do a variety of things: go to assemblies, swim, eat a late lunch, etc. (We wouldn't expect her to be a mindless thing who, at 2:30, began to put her things away no matter where she was or what she was doing.) To what extent would the response of putting things away be appropriate for contexts other than the stated one? Hopefully, to a large extent. We would like to see Diane put her things away at 2:30, at 9:00, and at a range of other times.

The diagram of the objective shows space in both the context circle and the response circle:

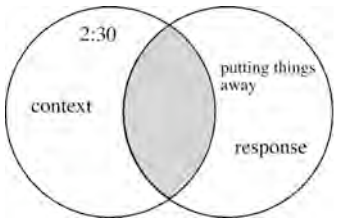


Figure 2.2

If we designed a program based on the original objective (Diane will put her things away at 2:30), we would treat the teaching as a "stimulus-response" problem; "How do we get Diane conditioned to 2:30 so that when the clock strikes the appointed time, Diane relentlessly puts her things away?"

This program would not be concerned with responses other than putting things away or with contexts other than 2:30. The objective implies that the context is a stimulus for a particular response. The program would be designed to increase the probability of the response in the presence of the stimulus.

The diagram shows that such a program would stipulate a limited response and would imply that the context of 2:30 is uniquely tied to a particular response.

2 – Adjusting the Diagram

To adjust the diagram, we make additions:

a) We fill in the empty space in the context circle with OTHER RESPONSES THAT ARE REASONABLY EXPECTED IN THE CONTEXT.

b) We fill in the empty space in the response circle with OTHER CONTEXTS IN WHICH WE WOULD EXPECT *THAT* RESPONSE TO OCCUR.

Here is the adjusted diagram:

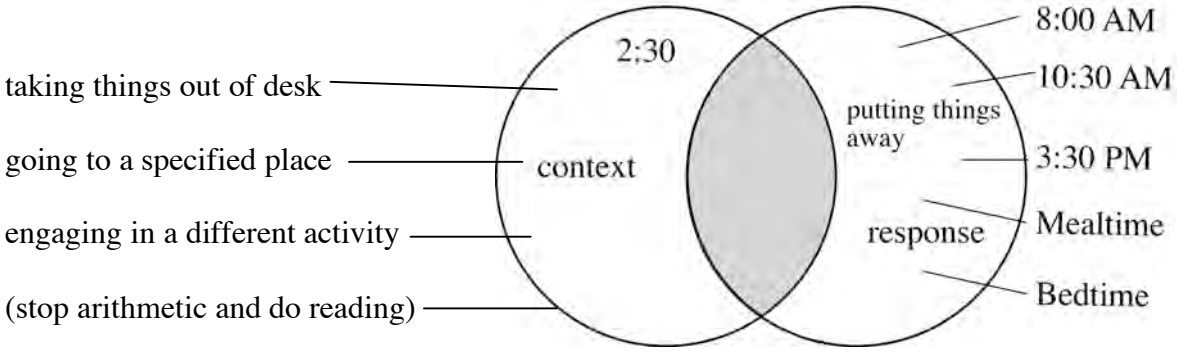


Figure 2.3

The particular additions are not intended to exhaust all possibilities, merely to provide the instructional designer with the information needed to take the next step in designing the program.

3 – Formulating a New Objective Based on the Adjusted Diagram

The adjusted diagram shows many "time" contexts and many different responses. To formulate an objective that fits the diagram, we ask two questions:

a) What do all the contexts have in common? All denote some specific time.

b) What do all the responses have in common? All involve discontinuing one activity and starting another.

The answers to the revised statement of the context and response generate this objective: "The learner will perform some specified action at some specified time." This statement of the

common aspects of the context and the response implies the wording for the new objective, which is: "The learner will perform *specified actions* at *specified times*."

This objective is not behavioral in the sense that it describes the chain of responses that the learner is producing. It is behavioral in the sense that it implies a number of such responses. The category *specified actions* includes: putting things away, reading a book, doing dishes, and a number of specific responses. These responses occur at some specified time — such as 4:50, 3:10, 12:06, etc.

Not only does the adjusted objective provide an accurate statement of what the learner must do and the context in which she must do it, the objective also implies what the teaching program must do. Note that the adjusted objective is not the program, however, it provides a criterion for testing the efficacy of any program. The program will teach the generalized skills necessary for the learner to perform specified actions at specified times.

Our objective forces us to work on the discrimination of "specified times" rather than 2:30. Therefore, we must make sure that the learner can *tell time*.

Our objective forces us to work on "specified actions" rather than merely "putting things away." Therefore, shaping approximations of behaviors (such as a tendency to put things away) would be abandoned and the emphasis would move to a strategy for teaching a variety of instructions.

4 – Teaching to the New Objective

We can now ask ourselves what kind of skills the learner would need to perform successfully at "specified times." One skill is telling time. Another is the ability to *estimate time*. This skill many not be immediately apparent; however, if the learner does not have the capacity to estimate time with some degree of accuracy, the learner will not perform the "specified actions" unless she happens to look at he clock at the appropriate time. She couldn't estimate that she would perform six minutes from now.

Another skill is subtracting time. ("It's 2:20 now. How many minutes until 2:30?")

A fourth skill is the ability to follow whatever directions are given ("Put your things away"; "Go to room 121"; "Open the front door"; "Put the Campbell's soup on the stove").

To construct a program, we simply put the elements together in a manner that is relatively efficient. Relative efficiency implies that we would *not* work on only one skill at a time. We would work simultaneously on various basic skills. It is quite possible, for example, to work on estimating time without knowing how to "tell time" or read a clock. The learner could practice estimating one-minute intervals initially: "Tell me when you think one minute has passed. Starting now..." The teacher would provide feedback about when the minute has elapsed. Later, the learner could work on estimating longer intervals. When the learner had reached a criterion of correctly estimating (within 14 percent) various intervals between one and ten minutes, the learner would be considered firm. This instruction could go on at the same time the learner was learning to tell time.

Once clock reading, time subtracting (hours and minutes to 30 minutes) and time estimation have been taught, the program would take the form of a series of applications, beginning with those that are highly prompted. First, the teacher would present the rule: "At 2:30, you're going to put your things away." The teacher would also remind the learner of the consequences: "If you do it the right way, you earn three bonus points…"

At 2:20, the teacher would prompt the learner: "What time is it now?…What time are you going to put your things away?…So how many minutes away is that?"

Note that the prompt involves the basic skills that have been taught—telling time, subtracting time, and then estimating time. To assure that the learner uses the time-estimation skill, the teacher might ration the number of times the learner is allowed to look at the clock. "You are allowed only one look." By fading out the prompts and by providing the learner with adequate practice in applying the skill, the teacher will teach the objective: "Diane will put her things away at 2:30." The teacher, however, will have also assumed that this behavior is framed within the context of other, similar objectives.

The same procedure outlined for Diane's program holds for any program:

1. The objective is diagrammed.

2. If there is empty space in the diagram, the diagram is adjusted by adding context items or response items.

3. An adjusted objective is then formulated (by determining what the common features of the new set of behaviors and contexts are).

4. This objective is then treated as a task and is analyzed (again to see what common knowledge and common behaviors are observed in all examples).

5. Finally, a program that will achieve this recast objective is specified.

Here's an objective that suggests a different diagram. Objective: "The child will imitate vowel sounds produced by the teacher, holding each sound for the same length of time the teacher does." What is the context? Modeled vowel sounds. What is the response? Producing the sound that is modeled.

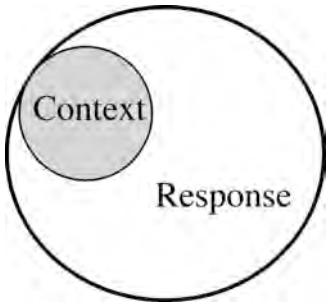


Figure 2.4

If we pursue the objective without first adjusting it, the objective may well lead to an improvement in the child's ability to imitate vowel sounds; however, this improvement may be at the expense of inducing echolalia and serious misunderstanding of what verbal communication is all about. The instruction may imply that merely mimicking sounds is the objective of human "communication." Some have argued (in effect) that imitation is the first step of the normal child; therefore, imitation should be pursued with all children. The language-delayed child is NOT a normal child and has not learned what the normal child has learned. The language-delayed child has learned effective nonlanguage behaviors for situations in which the normal child uses language. The logic of concentrating on imitation is therefore highly questionable.

Adjusting the diagram. We adjust the diagram by specifying some additional contexts for the unshaded response area.

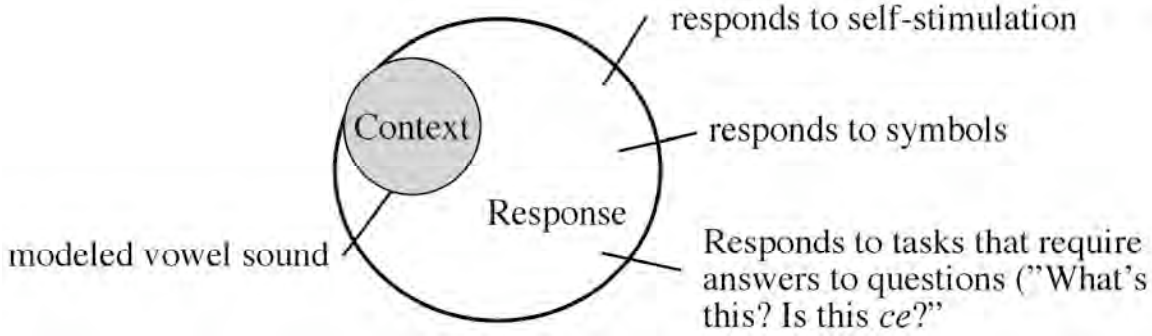


Figure 2.5

The context (vowel sounds that are modeled) would support only the imitation of vowel sounds (except perhaps listening). The response of producing these sounds, however, should not be limited to the imitation context, but might include responding to symbols: "When I touch the letter, you say the sound. Remember to say it as long as I touch it." Also, the learner might be required to answer questions: "Let's hear you say three different vowel sounds…" If the program specifies these tasks, the teaching of vowel sounds to the low-language performer will not create mislearning that could adversely affect other learning situations. The learner will produce the vowel responses in various contexts. This range of application assures that the learner will not develop serious misrules about the conditions under which the response is to be produced.

Formulating a new objective. From the adjusted diagram, we derive the following revised objective: The child will produce *vowel sounds* in response to a *variety of tasks* (teacher model, symbols, questions). Note that the new objective has the same response as the original. The context, however, has been expanded. The program implied by the revised diagrams might present the most direct context first (imitation); however, the other contexts would follow as soon as the learner had mastered the first context. After the learner had met a criterion of performance on saying the vowel /a/, for example, questions involving /a/ would be presented. Other sounds would be introduced as /a/ is reviewed. A number of workable sequences are possible. Each, however, would assure that the learner responded to the vowel sounds in contexts with various responses.

As both of the preceding examples illustrate, the greatest problem with the programs implied by unadjusted objectives is not that it fails to teach the targeted skill, but that it potentially disrupts the learning of other important skills. For example, a program that taught imitation of vowel sounds might well succeed in showing that the learner improved in producing these sounds. We might be tempted to conclude that the program works. After all, the objective has been met.

The program, although it achieved the *stated objective*, failed to achieve the *adjusted objective*, and is therefore not instructionally desirable. It is based on the assumption that the objective exists in isolation and a program deriving from it has no possible influence on other skills.

The opposite of this problem may occur when the original objective *is* reasonable, but the designer teases it into a grotesque form. Objective: "Brian will turn bolts in a clockwise direction, using a socket wrench." What's the context? Bolts. What's the response? Turning bolts clockwise.

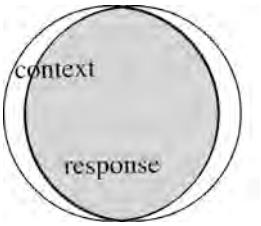


Figure 2.6

What other responses would we expect in the context of the wrench and bolt? Virtually none. We're not interested in teaching counter-clockwise screwing (which may be perfectly reasonable for a production-line job), and we're not interested in Brian throwing, eating, or doing something else with a bolt or wrench.

To what extent would we expect the response to occur in contexts other than the stated one? To a relatively small extent. The skill might apply to screws and possible other objects that are quite similar to bolts; however, the range of application to other contexts is fairly small.

The diagram indicates that the objective should be taught as stated. Brian should be taught the stated behavior — NOT words about the behavior. We would not attempt to teach Brian to "discriminate" between objects labeled as *socket wrenches* from other objects (such as *open-end*

wrenches). Nor would we teach the learner to respond to words about "clockwise." The objective doesn't mention *anything about these words. It mentions a particular action.*

To figure out a teaching sequence, we ask the question: "What do all examples of turning in a clockwise direction have in common?" One thing is that the "clockwise orientation" is relative. If you look at the bolt so that you can see only the head, clockwise is this way. →
The program shouldn't present the bolts only in one position (always with the shafts vertical and the heads up, for example). They must occur in a variety of positions or orientations (with heads down, the shafts horizontal, etc.). Furthermore, a test is implied. The learner may be required to "sight" the bolt (orientating himself so that only the head is visible), then turning. Or, the bolt may be mounted on a devise that can be moved as the learner turns the bolt. The bolt may start out in a vertical orientation with the head up. As the learner turns the bolt, the bolt changes orientation so that it is horizontal. The learner is still turning in a clockwise direction. The learner is instructed to stop, and then to start again. The probability is great that the learner is still turning in a clockwise direction.

There are different prompts and different sequences; however, the goal of each is to teach the learner to respond correctly to a variety of bolt orientations. The goal is not to teach words.

Summary

The steps in using behavioral objectives to construct mini-programs are:

1. Diagram the objective.

2. Adjust the diagram by filling in any unshaded context space by specifying responses, and filling in unshaded response space by specifying contexts.

3. Formulate a new objective to fit the diagram. You must make up a statement that fits what the diagram shows. This objective must indicate what is common to all specified responses and all specified contexts.

4. Figure out program skills. Ask what behaviors are common to the specified responses or what knowledge is common to the activities.

5. Finally, sequence this information in a program that accounts for the teaching specified in the objective.

We haven't gone into a great deal of detail about program construction. We have dealt with it enough, however, to make this point: Programs can be constructed to achieve a variety of objectives. If the specified objective is faulty, the program that is well designed to achieve that objective will produce "faulty learning." It will be faulty because of its influence on other learning, which is why it is important to consider the objective in relationship with other objectives before constructing a program. The more traditional uses of behavioral objectives violate this procedure and reveal themselves as fanciful. These uses assume that what is learned in one sector has no influence on any other sector.

Chapter 3

The Philosophy of Diagnosis

Teaching is the act of changing the learner's behavior in specified ways and achieving this behavioral change through the manipulation of environmental variables only. If a diagnosis is to be relevant to the teacher, it must clearly imply teaching. It would be a strange diagnosis if it led to medical remedies because the teacher doesn't manipulate "medical variables" with a scalpel or drugs. Unfortunately, most of the diagnostic procedures used in schools are strange. They provide either information that is irrelevant to the teacher (because it implies remedies that the teacher is incapable of providing), or they direct the teacher to manipulate vague, nonspecific variables.

A diagnosis that provides irrelevant information is the type that relies on case history information. Although this information may provide for interesting reading, the fact is that the teacher cannot take the learner back in time and change the history. The information is perfectly worthless from an instructional standpoint. The only data that are relevant to the teacher have to do with the learner's performance. If the learner is not able to do something or follow directions for doing them, an instructional remedy is implied. Teach the learner the information or skill.

Another diagnosis that provides irrelevant information is the developmental one that tells something about the child's IQ or rate of development. While this information may be of some value to the administrator who must know how many children will be in different types of classes, it is irrelevant to the teacher. If the child is developmentally slow, what are the implications for "speeding the development"? The teacher doesn't have access to the child's development. Nor is the child's aptitude within the domain of the teacher.

Diagnoses that are too vague or general to be much good to the teacher are those that categorize "primary mental abilities" of sorts. The teacher is told that the child has "auditory-visual association" problems. The teacher of course already knows that the child can't remember the name of letter sounds. Precisely how does the diagnosis help her? It certainly doesn't tell her much about the specific problem with which she is concerned. It simply provides "fancy words" that somehow give the learner's problems more formal status. This type of diagnosis actually provides *less specific information* than the teacher had before the diagnosis; therefore, the diagnosis can't possibly direct the teacher to the solution of the observed problem. It can only provide a spurious remedy. For this "remedy," the learner would be presented with a variety of selected "auditory-visual" tasks. The learner would be tested on a selected "test of auditory-visual perception." The test would disclose that indeed the remedial program has changed the learner's performance on these test items. However, the teacher discovers that the learner still can't remember the letter names. The "remedy" is an independent circuit that has very little to do with either the problem that was identified or an effective solution to the problem. It provides the diagnosis, the criterion for the remedy of the problem, and it provides the program. Unfortunately, it solves the problem that it poses for itself, not the problem the teacher identified in the first place. It judges the child improved in auditory-visual associations when the teacher is left with no compelling demonstration that anything important has changed.

The psycholinguistic approach to diagnosis implies remedies that can be achieved by manipulating environmental variables; however, these remedies are far too vague and circuitous to meet the highly specific needs of the teacher. A diagnosis must provide the teacher with very specific information about what should be done to teach skills—such as letter identification.

Aptitude versus Instruction

The problem with the traditional diagnostic approach is that it attempts to provide information about the learner's aptitude, growth, potential, or capacity. The idea behind these tests is that they can somehow tell us something about the underlying child and what is wrong with *him*.

This goal is preposterous. All we observe in any teaching or testing situation is the learner's behavior. This behavior is the product of two things—the learner's "aptitude" and the effect of the environment or the effect of "instruction." (Note that when we refer to "instruction," it is not limited to formal instruction. The learner may have learned much from peers, from self-investigation, etc. Any interaction between the learner and specified environmental inputs that lead to a change in the learner's behavior constitute some form of instruction.)

Nearly everyone would agree with the simple formula: Behavior equals aptitude plus instruction. If this formula is accurate, and if it is true that we observe only behavior, not aptitude, how is it possible to infer aptitude from behavior? We see the learner perform in a particular way. Does this performance imply that the learner has a particular innate tendency, or does it imply that the performance is primarily the result of instruction the learner has received? If all we see is behavior when we look at a learner in a diagnostic situation, we can't answer the question. Nor can we tell how much of the learner's behavior is accounted for by "aptitude." The learner throws tantrums. The learner fails to attend. The learner sulks. A traditional diagnosis might try to relate these outcomes to some "tendency" in the learner's personality. A position that is equally valid is that the behavior shows nothing but what the learner has been taught. Whether this judgment is valid in a particular case is moot. The only way to ascertain the answer is to teach the child. So those involved in teaching are best advised to discard developmental and historical information and express the learner's problems in terms that imply instruction.

In theory, the formula is simple. We can control the learner's instruction by maximizing it. We maximize instruction when we use an approach that works across a wide range of aptitudinal differences. If instruction is maximized, it is ruled out as a variable and therefore permits us to see how much of the learner's behavior is controlled by aptitude. After we maximize instruction, we may note virtually no change in the learner's performance. We can then conclude that the learner's performance is strongly dominated by aptitude. If maximized instruction results in great changes in the learner's behavior, the conclusion is that the learner's original behavior was strongly influenced by faulty instruction.

In summary, if maximized instruction yields a small change, aptitude is dominant; if maximized instruction yields great change, instruction is dominant.

Diagnosing Instruction

Interestingly, precisely the same diagnostic approach would be used if we wanted to diagnose the instruction the learner receives. The only variable we can manipulate is instruction, not aptitude. How would we manipulate it so that we could evaluate the effects of instruction? By maximizing it. If the approach we develop creates positive changes in the behavior of learners who have greatly different aptitudes, the instruction is effective.

Whether the diagnostician is interested in diagnosing the learner's potential (aptitude) or the effects of instruction, the diagnostic procedure capable of yielding valid information must begin with a diagnosis of instruction. This diagnosis is far different from the traditional clinical approach. It does not involve standardized tests. It is not achieved in only a few minutes. And it is not based on written descriptions of what is done with the learner.

Inadequacies of Written Descriptions

A task description tells only about some details of the task. It doesn't contain a description of the various details the task designer failed to control. The written description of what seems to be a reasonable sequence could describe an activity that is quite successful or one that is appalling. Consider this written description:

> The student identifies colored objects by pointing to the appropriate objects as the teacher names the colors. Objects, which are presented on the flannel board, include figures of flowers, trucks, trees and geometric forms. The colors are yellow, white, red, blue, green, and black. When the student's level of performance exceeds 80 percent on the set that has been introduced, a new color is added.

We cannot possibly judge instruction from the description above, because the description is far too void of detail. The description merely raises questions. The safest procedure for assessing written descriptions is to *assume minimum knowledge of the person who wrote the description*. For example, the written description of the task above does not indicate whether the same objects are used day after day (making it possible for the learner to memorize the objects by referring to details such as a smudge in the corner of the form that is blue). A minimum-knowledge interpretation suggests that *the writer is not aware of this possibility and didn't control for it*. Also, the description did not indicate that the colors are to be presented in random orders and not in particular places (the yellows here and the greens over there). Again, this stipulation is not named in the description; therefore, we assume that the designer is not aware of the influence of position or temporal order on performance.

By applying a minimum-knowledge interpretation to the vast majority of tasks described in Special Education literature, we would arrive at the same conclusion. If we assume that the task described above is "adequate," we would then have to conclude that a learner who failed the task is "faulty." Actually, however, the fault may lie not with the learner but with the task. The learner may have responded in a perfectly reasonable manner. If red always follows yellow during the training, and if the learner misidentifies red later when it is not presented in the same

temporal context, the learner was unintentionally taught a misunderstanding. The performance is a function of poor instruction, not lack of aptitude.

Observations

Observations of actual teaching provide the most concrete information about the effectiveness of instruction. If actual observations are impossible, videotape records may be used. They have two major drawbacks, however:

1. Sometimes they don't show exactly what happens (particularly when the camera views the teacher from a poor position).

2. Even more serious, we cannot tell the teacher on tape to alter the presentation and thereby resolve any ambiguity observed in the presentation.

If we are observing a live teaching situation, we can instruct the teacher to present a variation that would answer the question we have about the learner's knowledge. If we are viewing a taped presentation, however, we can only note the possibility of misinterpretation, but our diagnosis is not complete until we find out whether there is a problem with the part of the presentation we questioned.

The Learner and the Instruction

The fastest way to achieve an accurate diagnosis of instruction is to begin with the idea that the problem, not the learner, is on trial. The orientation demands that we make these two assumptions:

1. We assume that the learner's behaviors are caused by the instruction he has received.

2. We assume the learner's knowledge is the *minimum* required to perform on the range of observed activities.

The learner's behavior. *We assume that the behaviors the learner exhibits are reasonable responses to what the learner has been shown and reinforced for doing*. We assume that if the learner throws tantrums, his responses are perfectly reasonable and that throwing tantrums is an intelligent solution to the situations presented to the learner. Note that this is an assumption, not a fact. We may later discover that indeed we cannot adequately account for some of the learner's behavior through instruction. We will not be able to draw this conclusion, however, *unless we first rule out the possibility that the instruction is responsible for the observed behavior*.

The learner's knowledge. *We judge the learner's knowledge with the same minimum-knowledge interpretation we apply to written descriptions of tasks*. Let's say the teacher said, "Open the door, Henry," and pointed to the door. After a moment, the teacher again points and prompts: "The door, Henry, open the door." The learner then goes to the door and opens it. The only productive interpretation is based on the minimum knowledge that could account for the behavior. We would assume that Henry did not understand a single word the teacher said. Henry

looked to where the teacher pointed and did what was most probably called for in the situation. This interpretation is possible. The task did not require Henry to operate from the words the teacher said to him. The point also provided information. Therefore, we assume that Henry did not operate from those words but attended only to the point.

By far the most common mistakes in diagnosing learning is not assuming minimum knowledge. If a child responds appropriately when the teacher hands him a piece of candy and says, "Put this candy in your mouth," diagnosticians assume that the child's appropriate response *proved* that the child attended to the instructions.

Remedies Following a Diagnosis

When we assume minimum knowledge, we make a testable assumption. The procedure for testing it is to redo the instruction so that *maximum knowledge* is required by the learner. In the example above, we would give the learner several directions, or present the learner with several utterances. One of these would be: "Open the door, Henry." We would not gesture, point, or give any spurious clues.

By assuming minimum knowledge, we identify any possible weaknesses in the instructional program. We assume that these weaknesses account for the learner's performance. The remedy is to redesign the instructional program so that there are no weaknesses (starting on the level the learner who had minimum knowledge would perform). If the change in instruction makes a change in the learner's performance, we conclude that the learner's problem was caused primarily by instruction. If the change does not significantly change the learner, we may tentatively conclude that the learner's potential or aptitude caused the problem.

Applications

Below are some actual examples of instruction that we have observed. In every case the minimum-knowledge assumption was confirmed by later testing.

1. The teacher is trying to teach or reinforce number skills in a group of very low-language children by playing a game that involves oversized dominoes. Each child has two dominoes. The teacher has a stack of them. She places one in the middle of the table, says the number that is shown by the domino, "Three," and waits for the children to respond. The idea is that if one of them has a domino with three dots on it, they are to place it in the middle of the table. One child in the group throws out one of his dominos every time the teacher places one of hers in the middle of the table. The teacher ignores the child's response if it is inappropriate. She pushes the domino back to him and continues the game as if nothing has happened. She "reinforces" him when his domino matches hers. What is the minimum knowledge that could account for this performance? If you keep throwing out a domino, you will be reinforced sooner or later.

The remedy would be a setting designed to require maximum knowledge or the knowledge suggested by matching a domino with the teacher's. This setting would make it highly improbable that the player could respond correctly *without* attending to the number of dots. The learner could be required to arrange toothpicks next to the dominos so that there was one

toothpick for each dot on the domino. When the learner has mastered this task, the learner could work on tasks in which the teacher puts out two rows of toothpicks, one below the other. The learner is required to: a) indicate whether the number in the top row matches that in the bottom row ("Do they match?"); and b) fix up one of the rows so that it matches the other row. Next, the teacher could introduce the "domino game." She would put out a domino. The learner would then make a row of toothpicks based on the number of dots on *his* domino. He would indicate if there is a match. As he becomes increasingly proficient at the game, the toothpicks are faded. Finally, of course, the learner works from the original game.

2. A male clinician has a clipboard on which is written to the following instructions:

> Go into the bathroom.
> Flush the toilet.
> Pick up a block from the floor.
> Put the block on the table.
> Take the jar from the table and put it on the counter.
> Take the towel from the counter and put it on the chair.

The clinician takes out a stopwatch and places objects around the room; the block on the floor next to the table, a jar on the table, a towel on the counter. After some effort, the clinician manages to position the child so that he is standing near the bathroom. The clinician then says, "John, go to the bathroom." John complies as the clinician places a check next to the first item on the list.

"John, flush the toilet." John again complies.

"John, pick up the block from the floor." John does it without waiting for the clinician to finish the instructions. And so the sequence goes, at the end of which the child is standing in the same spot he was at before receiving the first instruction. "Good boy, John," the teacher says, and gives John a reinforcer. The clinician then resets the stopwatch, puts the block back on the floor, the jar on the table, and the towel on the counter.

"John, go to the bathroom." The sequence is repeated again, in exactly the same order as it had been presented the first time (and in the same order it will be presented the next time).

When asked, "What is the purpose of this routine," the teacher indicates that John has not been following directions. When he did follow them, it was always after some prompting. This routine was designed to give John practice in following directions rapidly. He received reinforcement only if he completed the tasks in so much time.

The minimum-knowledge interpretation of the learner's performance would be that *John did not attend to one word the teacher said*. Instead, *he memorized the routine*, in much the same way a rat learns to negotiate a complicated maze. The test of whether the learner operates from minimum knowledge, of course, is quite simple. Place John at his starting point and then present a series of commands such as, "John, go to the jungle gym… John carblenard the gloober…John, eat the nardigle…John, stamp out all the purple alligators…" When tested on such a series, John

performed the same series of six responses in the same order he did with the original sequence. *The routine is designed so that John did not have to listen to the instructions; therefore, John probably doesn't listen to these instructions.* The sequence, although designed to prompt following-directions behavior, actually reinforces not attending to directions. The remedy might begin with simply following instruction exercises such as "Stand up," "Touch your mouth," "Sit down," "Clap." We would present these in a *random order* so that the only clue John would receive about what to do comes from the *instructions*, not from his place on the floor, what he did last, or any spurious cue.

3. Jenny provides a picture somewhat different from the preceding ones. John and the domino player were probably treating the language of the teacher as perfectly content-void sounds that signaled *when* the next action was to take place. Jenny, on the other hand, is attentive. She performs successfully when these tasks are presented in random order: "Touch your head…Touch your nose… Stand up…Pick up the fork…Pick up the pencil."

She has problems with tasks such as, "Put the pencil under the chair," and "Touch the pencil." (She puts the object handed to her *on* the chair, and she picks up the pencil.) There is a very common minimum knowledge interpretation for her performance. *She attends to the last word of an utterance.* She understands that if there is a verbal command that ends "…fork," she is to pick up the fork. Although we may identify several specific examples in which Jenny responds to words other than the last one in our utterance, Jenny's basic strategy is to attend to the last part of the utterance.

The remedy follows from the problem. Jenny attends to only the last part of the utterances; therefore, we'll structure groups of tasks that a) have the same last parts, but b) have different first parts. The only possible way that Jenny will be able to correctly respond to these will be to attend to the first part of the utterances. The remedy is designed so that if Jenny uses the strategy she has used in the past, she will make mistakes. The remedy demands maximum knowledge.

We might first teach Jenny to "touch." The command would be a single word: "Touch." Different objects would be presented. The teacher would point to an object and say, "Touch." Once the basic touching behavior had been established, then a single object would be presented and the teacher would direct Jenny to "Touch…pick up…pick up…touch…touch…pick up…touch… touch…" until Jenny performed on a string of perhaps five consecutive examples. A variation of the task would then be introduced. The teacher would point to different objects and tell Jenny to either "touch," or "pick up." No object names would be involved in this exercise, however.

For the final step of the program, the teacher would present random tasks that involve both the action and the object name. Initially, the teacher would stress the action words. Later, the stress would be dropped. "*Pick up* (pause) the cup…*Touch* (pause) the spoon." Other members would be added to the set ("Hand me _____, …Put _____ on _____"), and other preposition tasks.

4. Ralph appears to be quite verbal. He can read and he can discuss things. He is particularly interested in telling about the things that he and his dad are building. After modeling five

examples of *over* involving a book and a table, the teacher holds the book over the table. “Is it over?” Ralph responds, “No.”

Teacher: Yes. It is over. Is it over?
Ralph: No
Teacher: Yes. It is over. Is it over?
Ralph: Yes.
Teacher moves the book slightly: Is it over now?
Ralph: No.
Teacher: Yes. It’s over now. Is it over now?
Ralph: Yes.
Teacher returns the book to the first position: Is it over now?
Ralph: No.
Teacher: Yes, it is. Is it over now?
Ralph: Yes.
Teacher returns to the second position: Is it over now?
Ralph: No.
Teacher: Yes it is…

The minimum-knowledge interpretation is that Ralph does not know how to use the information the teacher is presenting. He is trying to guess the pattern of responses that he should produce. He seems to think that after each *yes*-response there is a *no*-response.

The remedy involves two separate tracks. For one, Ralph should be taught a series of simple concepts (like *over*) through examples. Each sequence would introduce a different pattern of positive and negative examples so that Ralph couldn’t memorize an order. The teacher should be harsh when Ralph fails to use information the teacher provides. The teacher should be reinforcing when Ralph uses the information. These exaggerated consequences should make it clear that Ralph receives reinforcement only if he attends to the examples and the labels, not the order of examples.

The Danger of Maximum-Knowledge Assumptions About the Learner

The maximum-knowledge interpretation is dangerous because it leads to possible erroneous conclusions about the learner and because it implies that the instruction the learner is receiving is faultless and therefore should be continued.

Conclusions about the learner. If we assume that John is actually attending to the instructions during his timed performance, we assume that John is perfectly capable of following any of the commands that are presented in the routine. We may further assume that John is capable of correctly responding to other instructions that are similar to those presented in the routine. Once we have made these assumptions about John's capabilities, we are forced to accept erroneous conclusions when we observe situations in which John does *not* respond to the instructions we suppose he understands. For example, as John is returning from recess, the teacher says, "John, hang up your coat." John stands in the middle of the room with what appears to be a vacant expression. "John, hang up your coat!"

The teacher's reasons: John is capable of following instructions; John is not following instructions now. Therefore, John is willful, or John is momentarily traumatized because the situation is reminiscent of one in which he burned himself after returning from the outdoors.

Once the maximum-knowledge assumptions have been made about John's capabilities, the only conclusions that can be drawn address John and John's performance, not the understanding that is clearly implied by a poor teaching sequence. Perfect understanding has already been assumed. The game is now to explain how he can actually understand without performing consistently.

Conclusions that Exonerate the Program

When the conclusion is drawn about John, the emphasis is spuriously displaced to finding out about John. Perhaps he should have a neurological examination, a vision and hearing test, a urinalysis, tranquilizers, and pep pills. Something is wrong with him. While this displaced emphasis is going on, two things happen: (1) the teacher continues the instruction (perhaps with additional zeal); and (2) the teacher receives feedback that reinforces the conclusion that John is at fault for his poor performance. John's instruction-following behavior does not improve, and a self-fulfilling prophecy results. The teacher concludes that the original diagnosis was correct and that something is radically wrong with *John*.

Since the observations of John's behavior are perfectly consistent with, and apparently confirm, the diagnosis that something is wrong with John, there is no reason for the teacher to entertain the alternative conclusion: there is *something wrong with the program*. The program continues, John fails to learn (as predicted), and the teacher is reinforced for diagnosing the learner's failure rather than the failure of the instructional program.

Diagnosing the Learner

If our interest is not the instruction the learner receives, but the learner's personality, learning capacity, or style, we must first perform an *instructional diagnosis* and rule out the possibility that the learner is responding in a perfectly reasonable way to the instruction he has received. For this diagnosis, we begin with the assumptions that the learner's behavior is maximally reasonable, and that the learner's knowledge is the minimum required to perform in the observed situations.

If serious faults are found with the instruction, a remedy is performed. Once the remedy has been implemented, we will be in a position to make reasonably valid statements about the learner. If the learner behaves in a manner that is characteristic of one who is relearning skills, we would conclude that the learner is behind in these skills but that the learner's progress is "normal" for one in this position. We also conclude that the cause of the problem was the instruction the learner had received earlier.

If the learner behaves in a manner that is not typical of those relearning skills, we can now say that we have identified particular learner characteristics that are unique and that suggest abnormal learning, attention, response to the reinforcement, memory, or capacity to discriminate.

The steps involved in a careful diagnosis of the learner are counterintuitive. When we look at Diane throwing tantrums and slapping herself in the face, we may be overcome with the sense that there is something seriously wrong with Diane's wiring system, that she is "not normal," and that she apparently deserves a label to express her deviance. If we are interested in discovering the extent to which Diane is a reasonable, normal product of instruction she has received, however, we must rule out the possibility that instruction or patterns of reinforcement are causing the observed behavior.

Whether we are interested in diagnosing instruction or the learner, we must first rule out the effects of instruction. Ruling out these effects is necessary if our objective is to diagnose the learner because there is the possibility that the learner's responses to instruction are perfectly reasonable and do not reflect any abnormal tendency on the learner's part. The instructional diagnosis involves *two procedural assumptions*: the assumption that the observed behavior is perfectly natural or reasonable, and the assumption that the learner performs according to the minimum knowledge (not the maximum knowledge) required to achieve the observed performance. These assumptions permit the quick identification of *possible* weaknesses in the instruction. Each identified weakness is further tested before a final judgment is made about how and where the instructional program is actually weak. The final test of weakness suggests the behavior that the learner would have to exhibit before we judged his performance to be adequate. Therefore, the final test serves as the "objective" or goal of a remedial sequence.

Formal testing and reporting on IEP's are extremely sterile sources of the kind of detailed information that is needed to suggest a remedy. These tests identify things the learner cannot do and other things the learner can do; however, they are usually so far removed from instruction that they don't deal with the central problem of what the teacher should do to remedy the observed deficiencies. A test may disclose that the learner doesn't know analogies. What does this mean to the teacher? How does this relate to the instruction the learner is already receiving? What does this imply about changes or continuation of what the teacher is currently doing?

The information posed by the formal diagnostic test provides ballpark understanding of the learner's current status. But it does not look at the learner from an instructionally oriented standpoint. From the instructionally oriented standpoint, the learner is engaged in activities every day. These are designed to accelerate his development, to teach specific things, to reinforce appropriate habits, to change behaviors that are inappropriate, and to move him progressively in the direction of greater independence, greater skill repertoire, and increased applications to

everyday life situations. From the instructionally oriented standpoint, a test has only two purposes: to imply whether these procedures are maximally effective, or to indicate specifically where they are wrong. The primary goal is not to compare the learner with others. Rather, it is to see whether the current instruction meets the highest standards that are achievable with the learner. The formal "standardized" test doesn't fit the scheme (except to provide a general checklist of things that apparently have and have not been taught). The actual teaching must be evaluated because only the actual teaching provides answers to questions about whether the learner is learning what the instruction suggests he is to learn, or whether the instruction is failing.

SECTION II

Chapter 4
Instruction Techniques

The first part of this section will discuss setting, scheduling, and use of another adult as a shill. The second part will focus on the actual teaching behaviors you will need to teach the low performer effectively.

Setting

A residential setting is most effective because instruction can take place during the child's entire waking day.

While it is possible to achieve some objectives in a "school" situation, the six-hour day of the school is not sufficient for teaching the range of language skills and social behavior that the child must master. For the child to see that concepts taught in school are used in other situations, these application situations must be provided — not left to chance. Activities must be programmed so that the child learns and performs as much as possible during his waking day (the entire day is not a drill, drill, drill session; much of it may involve using those skills that have been mastered, or learning skills that can't be taught very well in the direct instructional situation). To make sure that the child remains sensitive to his peers and to other adults, the child must be taught.

For the institutional setting to work, however, there must be an adequate staff. During the initial stages of instruction, the low-performing child will require individual instruction. Even after he moves into a small instructional group, most of the instruction will consist of individual turns. Much teaching should be done at meal times, during daily routines of dressing and going to bed. Also, playtime must be structured so that the child receives practice in using the skills that he has been taught.

On the average, there should be one adult for every three to five children. With fewer adults, less will be achieved.

The guiding philosophy behind a successful program is that time must not be consumed; it must be *used*. Time is the teacher's worst enemy. The child has a severe performance deficiency; further, he is learning at a rate that is far slower than that of his age peers. For him to catch up, he must be taught at a rate much faster than he has learned historically. Economy in technique is essential. Skills must be taught quickly and smoothly. Practice must be designed so that the skills that have been taught are quickly consolidated. No activities are introduced for sentimental reasons, or with the rationale that they may do the child some unidentified "good." Every activity throughout the child's working day has specific instructional objectives. These objectives must be met.

A frequent reaction to such a highly structured approach is: "Won't that be hard on the children with all the constant pushing?" The answer is, "No." The program will not be particularly difficult for the children; it will be quite demanding on the staff, however. Staff members must

become conscious of their own behavior. They must know what they are doing, and precisely why they are doing it. They must understand that when they let up and begin to relax, the children will start to slip back into habitual patterns of behavior.

These children are far from normal. They sometimes look normal, and some of their reactions are quite normal. But they are the products of serious mislearning. To change their behavior patterns requires a program strong enough to induce them to let go of their habitual responses in favor of the learning game that is new and difficult.

Getting started. One of the most difficult parts of working with the low-performing child is getting started. Typically, highly structured instruction is delayed to allow the child to "adjust" to the new environment. The argument is that the child will not be able to adjust to the new situation until he has been introduced to the situation. If the child is successful in adjusting to the pre-instruction routine of the school, he will have to readjust when formal instructions is introduced. In other words, he will have to go through a double adjustment period for no particularly valid reason.

Show the children what is expected of them *on the first day you work with them*. The sooner a child discovers that he must perform in a manner different from that to which he is accustomed, the faster he will adjust.

Scheduling

Because of the low performer's language deficits, language instruction must go on throughout the day. The initial instruction must take place on an individual basis. No attempt should be made to have the children work together or to respond as a group. If necessary, the teacher may work with two children at the same time; however, the teacher is actually only working with one child for a few minutes, then switching to work with other the child for a few minutes.

Plan to work with the child for three structured language periods during the day (seven days a week if possible). The periods should be scheduled so that the child goes from each language period to a period that is potentially reinforcing for him. While it is impossible to include schedules for the variety of situations that occur in institutional settings, a sample schedule appears in Table 4.1.

Table 4.1
Sample Schedule

Time	Child A	Child B	Child C
7:30-8:00	Dressing	Dressing	Dressing
8:00-8:45	Breakfast	Breakfast	Breakfast
8:45-9:15	Language	Play	Play
9:15-9:45	Play	Language	Play
9:45-10:15	Play	Play	Language
10:15-10:45	Language	Play	Play
10:45-11:15	Play	Language	Play
11:15-11:45	Play	Play	Language
11:45-12:30	S T R U C T U R E D G R O U P A C T I V I T I E S		
12:30-1:15	Lunch	Lunch	Lunch
1:15-1:30	Rest	Rest	Rest
1:30-2:30	S T R U C T U R E D G R O U P A C T I V I T I E S		
2:30-3:30	----------GROUP LANGUAGE----------		
3:30-5:30	-------S T R U C T U R E D R E C R E A T I O N -------		
5:30-6:00	TV or Rest	TV or Rest	TV or Rest
6:00-6:45	Dinner	Dinner	Dinner
6:45-8:00	TV & Recreation	TV & Recreation	TV & Recreation
8:00-9:30	----------CONCEPT & SKILL REVIEW----------		
9:30	Bed	Bed	Bed

The schedule implies that the children are not left to "play on their own." Note also that in the afternoon there is a language period (2:30-3:30) in which all children are present. During this period, the teacher works with the children individually, reviewing some of the skills that she worked on earlier. The period also provides the teacher with an opportunity to prepare the children for the kind of work they will be doing later when most of their instruction will occur in small instructional groups.

At the end of the day is a concept and skill review. This review takes place immediately before the children go to bed. The retention of skills reviewed at this time of day is greater than retention during any other time of day. There is nothing to interfere with the learning. The child engages in no subsequent activity except sleep. This period is therefore very important for accelerating the child's learning.

The schedule above may need to be adjusted to fit your needs. The constraints of your situation may not permit the ideal. The price for less than the ideal is slower performance gains. The motto for all situations should be: Make optimum use of the instructional time that is available so that the child learns as much as possible during the available time.

Use of a Shill

The shill is another adult that shows the child the kinds of responses she is supposed to produce. While it is possible to work without a shill, the shill makes two types of situations easier:

1. You want to show the learner the response that she is to produce. Without a shill, this task may be difficult. If you present the question and the answer ("What is this? A ball."), you will probably discover that when you try to test the learner ("What is this?"), the learner repeats the question ("What is this?"). You follow by saying, "A ball." The learner then says, "A ball," and you are well on your way to reinforcing echolalia, or establishing it. In other situations, you would present a misrule to the learner if you produced the response that she is to produce. For example, you instruct the child to "Touch your head." You then ask, "What are you touching?" The child responds, "Your head." You say, "No, not your head. My head. You're touching my head." Of course, this is a lie. A shill helps to show the learner the response to be produced. You ask the question, "What is this?" the shill says, "A ball," and repeats the response only, until the child produces the response. Note that the shill produces only the responses therefore, if the child imitates the shill, the child will produce the appropriate response. (Later, the shill's intervention is dropped.)

2. You want to teach the learner to attend to your commands and to produce the responses that are called for. Although you may be able to operate without a shill, the shill is useful, particularly on tasks that may involve some distance between you and the child. For instance, if the goal is to teach the child that when the cowbell rings, she must stop doing what she is doing and go to the door, the shill may sit behind the child and provide the learner with a mildly aversive poke if the child does not respond to the bell. A variation of this procedure may be used when you are working with a child for the first time. The shill sits behind the child and provides different types of pokes or physical prompts as you tell the learner what to do. This division of labor enables

you to present the tasks and reinforce appropriate performance while the shill performs the other feedback functions.

If a shill performs properly, the learner is provided with compelling demonstration that (a) she must attend to what is said, and (b) she must respond in a particular way. This learning may be quite new for the child and may stand in dramatic contrast with what the learner has previously learned.

Below is a detailed script describing how teacher and shill work on an initial task: "Stand up-sit down." More detailed procedures for teaching this task are included in Part III of this manual; however, we include the task here as a demonstration of how the shill functions.

The rationale for working with initial tasks such as "stand up-sit down" is simply that these tasks *can be enforced by the shill through physical manipulation*. If the child does not stand up, the shill can physically stand the child up. If the teacher presented a task such as "Say car," there would be no way that the shill could physically manipulate the child so that she would produce the response. (The shill could not touch the vocal chords in a way that produces the appropriate response.)

Format 4.1: Use of Shill

The child is seated in a chair of appropriate size. The teacher is seated in front of the child. The shill is to stand behind the child.

Teacher	Shill	Reinforce appropriate response if child imitates the standing.
1. "Stand up."	Wait one second. If the child responds, do nothing. If, after one second, the child has not responded, tap the child on the shoulder. The tap is designed to let the child know that he is expected to respond. The tapping should last only two seconds (about four taps).	
2. "STAND UP." (more emphatically voiced than before)	Wait one second. If the child responds, do nothing. If, after one second, the child has not responded, tap the child vigorously on the shoulder. The tap should be harder. It should communicate to the child that the more emphatic voice instruction leads to more emphatic consequences. If the child does not respond to the tapping after about two seconds, the shill should physically stand the child up.	Do not reinforce child for standing if shills stands the child up.
	Gently seat the child.	
3. "Let's do it again."		
4. "STAND UP." (This instruction should be emphatic.)	If the child has not begun to stand up after one second, vigorously tap the child. If the child does not stand up after two seconds of tapping, physically stand the child up.	
	Gently seat the child.	
5. "Let's do it again."	Teacher	

This same task should be presented until the child initiates the response from the tapping of the shill or from your voice. When the child responds without being physically stood up by the shill, reward the child. Do not reward the child if the shill physically stands the child up. The child receives reinforcement only if she initiates the response.

The shill's tapping is designed to serve as a mild aversive consequence for not following the teacher's instruction, and also to prompt the child that he must respond. In addition, the tapping is designed to begin programming a reaction to your voice. The child has probably tuned out voices for a long time. The tapping following a command will build an association.
Your voice creates uneasiness. The child cannot ignore your voice. Later, it will be relatively easy to teach the discrimination that your voice does not always lead to mildly aversive consequences. Initially, however, you must program the child so that he reacts to your voice: he must listen to it, and he must respond to it. Only if he learns to react to your voice will he be able to learn the subtleties that are carried by the things you say.

If the child does not follow the instruction after two seconds of tapping, the shill physically stands the child up. This is designed to show the child exactly what is expected. The tap serves as a reminder. If that does not work, the child must be made to respond.

For the shill to be effective, *the timing of the tapping and of standing the child up must be very accurate and very consistent*. If the shill waits too long to tap the child, the child may have forgotten the teacher's instruction. If the shill's tapping comes too soon, the child will not have had a chance to initiate the response on her own and may learn misrules about voices and commands. It takes practice to become good at shilling, but it is worth the effort. A good shill can help the child learn much more rapidly than if the shill were not there.

Summary for the shill. The shill is to enforce the presenter's commands and translate the presenter's commands into action.

1. The shill taps the child one second after the presenter has presented a command if the child has not initiated an action.

2. The shill does not tap the child it if appears that she is trying to respond to the command. The shill may wait longer than one second if the shill is undecided about whether or not the child is responding.

3. The shill taps more vigorously after a command that was issued emphatically.

4. The shill physically enforces the command if the child fails to respond after the second presentation of the command. The shill first taps the child vigorously; one second after the child has failed to respond. When it becomes apparent that the child will not respond to the tapping (after no more than two seconds of tapping), the shill is to stand the child up.

5. The shill is not to talk to the child or do anything that would place the shill in competition with the presenting teacher. Rather, the shill is to orient the child toward the teacher.

6. If the child tries to run away, or if the child begins to respond to a command before the teacher has issued it, the shill is to restrain the child.

Teaching Behaviors

Pacing. A very important behavior when teaching the low performer is pacing. Pacing involves how rapidly you present tasks, how interesting your presentation is, and how well you use breaks and pauses to permit the child to relax. The first consideration in pacing is how rapidly you present tasks. The rate of presentation will vary depending on the child, but a general rule is that you should present a series of tasks so there are no long pauses between the tasks.

1. Present the task: "Touch your nose." Speak at a normal rate—don't speak very slowly, even if you think the child does understand the instruction. Speaking slowly will only make the task more difficult.

2. Child responds correctly.

3. Immediately praise the child. (Praise will be discussed in more detail later.)

4. Possibly give the child a tangible reward. (Do not allow the child a long period to consume the reward, if food is the reward. The child should learn that she is not setting the pace of the lesson.)

5. Immediately present the next task.

6. Child responds incorrectly.

7. Immediately correct the child and present the task again.

8. Child responds correctly.

9. Immediately praise the child.

10. Present the next task.

The above sequence of two tasks should take no longer than fifteen seconds. The only pauses should be for the child to think about the response. The lesson progresses very rapidly. With this rapid pace, you can achieve a lot more teaching in a thirty-minute lesson.

The third pacing factor is how well you use breaks and pauses in the lesson. The type of breaks that you provide will vary for each child. The breaks are designed to serve two functions—to reinforce the child for working hard, and to get the child's mind off the lesson so that the child will be fresh and ready to go when you present the next task. Breaks should be used when the child has worked very hard for several tasks in quick succession, and any time you feel that the child is having a great deal of difficulty with a given set of tasks. A break following successful performance should be more reinforcing than a break following failure. The break should never

be provided in response to a child's minding. They should clearly be under your control, not the child's. The break may last from about half a minute to probably no more than three minutes.

In the first case breaks are used, the child works hard and is succeeding on most of the tasks that you present. When the child is in this kind of a streak, run the sequence for as long as you think the child will continue to be successful. This might be as long as ten tasks in a row. Stop and give the child a break before the child begins to get bogged down and starts to make a large percentage of mistakes. You want the child to experience these long runs of successful performance, but you need to stop before the child begins to fail. In response to all successful performances you praise or acknowledge; however, the reinforcement must be brief, as noted above. If it is long, you are actually reinforcing the child for delaying or remaining off task.

In the second case, the child is not being successful. In fact, the child is having a large amount of difficulty and is approaching a frustration level. Once the child reaches a frustration level, you need to get off the task. The frustration will cause the child to make mistakes on tasks that have been very easy for him in the past. Before the child reaches this frustration level, you should go into some kind of a break. Note: do not use breaks to teach the child that he can get out of work by performing poorly. If you go to a break every time the child seems to be having difficulty, you will soon teach the child the behavior that controls you and that leads to a break.

Another type of break is simply to switch from a task that is very difficult for the child to a task that the child has mastered in the past. For example, if the child is having difficulty with a task that requires him to discriminate between "touch the cup" and "pick up the cup," you could switch to a familiar sequence task like "stand up-sit down." This gets the child back into a success pattern and will help build the child's confidence. Then go back to the original task.

Motivation

Many low-performing children have learned to ignore what adults say. These children must learn that following an adult's instruction leads to positive consequences, and that not following leads to negative consequences. The tools that you will use to motivate the child will be positive reinforcement, punishment, and specific techniques for eliminating bizarre repetitive behaviors.

Eliminating inappropriate behaviors through punishment. One of the most powerful tools that can be used with the low performing child is punishment. If you try to use punishment as the sole means of motivating the child, you will only have success in eliminating behaviors. The instruction that you provide must go much further than that. In addition to eliminating inappropriate behaviors, you must teach the child that following instructions can lead to positive consequences.

Understand that you use both punishment and reinforcement to convey information to the learner as well as affect the learner's emotions. If the child learns that some behaviors practiced in the past do not lead to the anticipated outcome but lead to outcomes that the learner finds aversive, the child will learn to abandon the behaviors. Punishment has a role in situations in which the learner produces no reinforceable responses. Punishment is used only to eliminate some inappropriate response and establish responses that lead to positive reinforcement. Think of punishment as information, and retain understanding that your goal is to be punitive but to be as

reinforcing as possible. In the information context, punishment is akin to anything else you would do to make a communication clear to the child. Just as you would make your language simple make the task simple, and effectively "exaggerate" the difference between one task and another so it's easier, you use punishment to show the difference between behaviors that lead to outcomes the child likes, and those he doesn't like.

Because punishment is used only to establish behaviors that you can reinforce, punishment that continues for a long period of time (the child receiving punishment for the same behavior day after day) is not effective and must be discontinued. If the punishment is inhumane because of severity, it must be discontinued. Punishment is capable of producing rapid changes in the learner's behavior. Once the behavior has changed, the punishment should be discontinued and replaced by positive reinforcement. Furthermore, if punishment is to be used, a monitor should be present to assure that punishment is used only for the intended purpose and that other reinforcement techniques do not work. In this context, punishment is often the most humane technique possible. We have worked with children who habitually slap themselves hundreds of times a day and who are in a state of apparent discomfort. One highly successful technique we've used is a squirt of cold water in the face immediately following slap. Typically the child stops slapping. The teacher then is very reinforcing, wipes the child's face and praises the child for not slapping. The water in the face was a punishing consequence. In this case, using it so it occurs every time a slap occurs and does not occur at other times provides powerful information that slapping leads to consequences the learner finds aversive. This is a humane use of punishment, far more humane than strapping hands to the side or sedating the child with drugs that preempt the child from learning anything useful.

In summary, punish a child appropriately if there are no relevant behaviors that you could reinforce. The child who is engaged in head banging is providing you with nothing that you can reinforce. Your options are basically: to wait until the child produces a reinforceable response; or to use procedures that will punish the kind of behavior in which the learner is engaged, which will result in some behavior that you can reinforce.

Punishment changes the learner's behavior. If it doesn't, it is not punishment. The only way to determine whether you're actually using punishment is to watch the child's behavior over time and see the extent to which the undesired responses are eliminated. Teachers are often confused on this point. Saying things that may sound punishing to others, such as, "Stop that right this instant!" may not be punishing to the child. To determine whether they are, we must observe the child's behavior. Note that teachers may punish when they think that they are reinforcing. They may reinforce when they think they are punishing. They may think that the consequences they provide for certain behavior will "punish" the behavior when in fact it makes the behavior occur more frequently, which means that it reinforces the behavior. Remember, the only way to determine whether a consequence is punishing is to observe the learner's behavior.

What happens when strong habits are punished? When strong habits are effectively punished, their rate and strength will increase for a short period of time and they drop off dramatically. The figure below shows the typical trend.

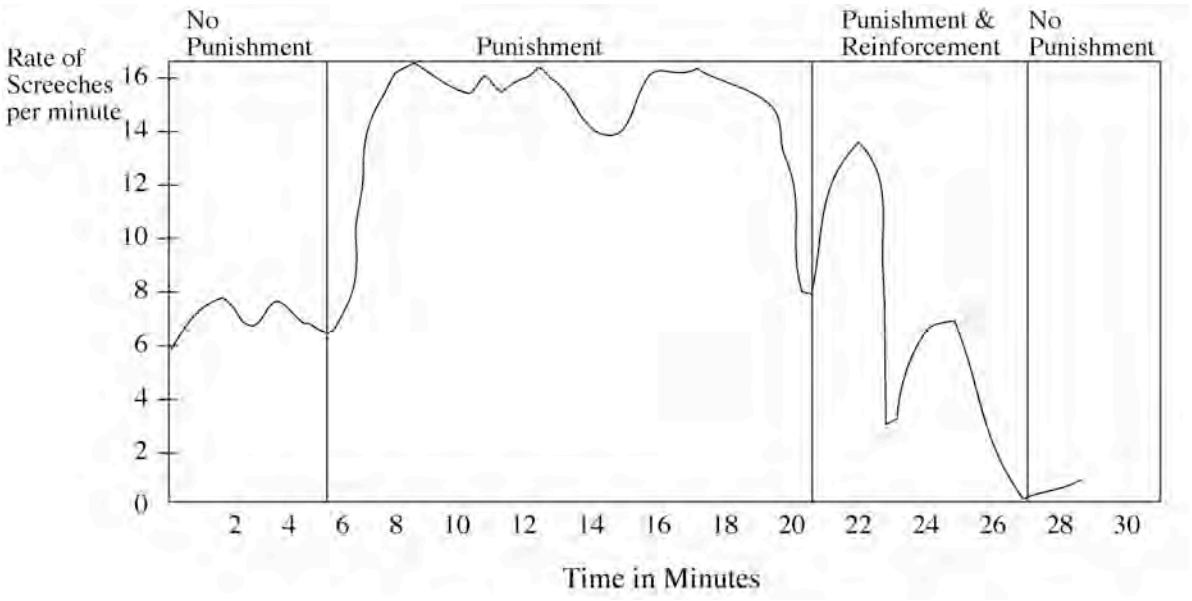


Figure 4.1

Punishment and Extinction

The figure shows the rate of screeching for a child. During the first six minutes of the record, the child is not punished and the rate of screeching is about six per minute. As soon as the punishment begins, however, the rate of screeching accelerates to the top of the chart. It remains high for about fifteen minutes, during which the punishment continues. Then it begins to drop off. The punishment continues; however, the learner is also receiving reinforcement for some quiet periods. Finally, 22 minutes after the punishment begins, the learner's rate of screeching has dropped to nearly zero.

The numbers will vary; the magnitude of the reaction to punishment will vary; however, the trend shown in the figure will almost always occur. As soon as the learner begins to receive punishment, the rate of the response that you're trying to eliminate will increase dramatically. It will remain very high for some time. Then the rate will drop. The learner will, in effect, let go. This trend is explicable if you look at the situation from the learner's viewpoint. The learner has learned that some behavior (such as screeching) is very effective and adaptive. They serve the learner in a variety of situations. They have always worked. When you punish one of these responses, the learner will use the most effective control devise that she knows, which is the behavior that you're trying to extinguish. The learner will try harder to make the reliable reaction work in this situation. After some time (from two minutes to an hour), the learner will decide that, although the behavior is productive in other situations, it is not working in this situation, and should be discontinued. This learning is not necessarily conscious.

The longer the learner has used a particular response, the more violently the response will accelerate when it is being punished, and the longer it will remain at a high rate before it stops.

Teachers frequently misunderstand the nature of effective punishment. They observe that when they "punish" a response, the rate increases. They take this as an indication that they are doing

something wrong. They discontinue the punishment, not knowing that what they were doing was appropriate, the proof of which was the escalation of the learner's responses. In the end, they strengthen the inappropriate behavior each time they quit, because they stopped before it was eliminated. This demonstrated to the learner that indeed the response is powerful and useful. The next time somebody tries to extinguish the inappropriate behavior, they will have to work harder than the teacher would have this time. (In the example above, if the teacher discontinued the punishment at 20 minutes, the learner would have received a demonstration that screeching works: "In the end, the screeching will make the teacher go away.")

How to punish. Mild forms of punishment are restraints. If the child is banging his head, for instance, you may hold his hands until the child stops squirming or trying to free himself. For other behaviors, more salient punishment is implied. Some of the more drastic forms of punishment include squirting cold water in the child's face, or presenting aversive air puffs to the child.

In many situations, punishment is not permitted. If you are in such a situation, you cannot punish, which is unfortunate. As noted above, punishment should be administered in the presence of a supervisor or other teacher, to assure that it is the most reasonable solution to the learner and is not injurious. The time duration for the punishment should be specified before the punishment begins. Punishment should not be used with older children who have highly engrained behavioral patterns. Children over 14 years old who have received a fair amount of punishment are virtually immune to punishment.

If you find that you are engaging in punishing the same behavior again and again, you are not using punishment. You are simply using aversion and not changing the behavior.

Tarnishing the Routine

Another powerful technique for eliminating inappropriate or bizarre behaviors is a technique called "tarnishing the routine." Tarnishing a routine can be used with any behavior that the child tends to engage in repeatedly. These routines tend to be reinforcing to the child because they produce a predictable response from the adults. One example is nose picking. Tarnishing the routine works by simply putting the routine under *your control*. One way of tarnishing the routine of nose-picking would be to tell the child that he can pick his nose any time he wants, but he must use his little finger instead of his index finger. Every time he begins to pick his nose, you make him use a finger that he would not typically use, and this is something that is far less reinforcing to the learner than the habitual way. The power of this technique is that you do not have to punish the child for picking his nose; you are simply putting the nose picking under your instructional control. A variation of tarnishing involves directing the learner to perform the routine repeatedly. Note: You would not reinforce the learner for performing the routine correctly. In most cases, tarnishing a repetitive routine will tend to eliminate the routine.

Changing Behavior Through Reinforcement

In addition to eliminating inappropriate behaviors, you must teach the child that following an adult's instructions can lead to pleasant consequences. If the child does not seem to be motivated by verbal praise, you must find a more powerful reinforcer. The reinforcer that you use must be

administered quickly so that you do not lose instructional time. Some good initial reinforcers are sugared cereal, milk, a sip or two of juice, etc. The reinforcer that you choose should actually be reinforcing to the child. If the child does not like raisins, and is not willing to do something to get raisins, raisins are not reinforcement to that child. Find out quickly what the child likes, and use that as the reinforcer. If you use something like milk or juice, you should only give the child small amounts at a time. About two swallows are sufficient. If you give more than a small amount, it will take the child too long to drink. Reinforcers must be quick. A second problem in using large amounts of food or drink for reinforcers is that the child will soon be full; the drink will no longer be reinforcing.

The use of tangible reinforcement should always be paired with verbal praise. When the child performs successfully on a task that you have presented, first tell the child that you are pleased with his efforts and tell him exactly what he did that you are pleased with. "Great, you touched the picture of the dog." Then quickly give the child the reinforcer. The sequence should always be:

1. Present the task.

2. If the child correctly performs the task, praise the child and describe what he did.

3. Administer the tangible reinforcement.

This sequence is important because it will train the child that verbal praise is reinforcing, because the verbal praise is always followed immediately by something the child likes. This juxtaposition makes the verbal praise reinforcing. Once verbal praise becomes a highly reliable predictor of reinforcing, the verbal praise becomes reinforcing. In other words, the child will now work for verbal praise, and the praise does not have to be followed with another reinforcer. It is the reinforcer.

After a delay of *no more than 3-5 seconds from the end of the child's response*, present the next task, even if the child is not finished with the reinforcer. The child needs to be shown that he must operate at *your* pace. If this point is not demonstrated, the child will shape your behavior so that you do things at a pace that he sets.

Initially you should reinforce the child with tangibles every time that he performs a task successfully. You want the child to see that if he does what you say, he will be reinforced. When the child consistently works for the reinforcement that you use, begin to provide the tangible reinforcer only intermittently. Continue to provide verbal praise for every appropriate response. The only difference is that you provide the tangible reward only sometimes.

One of the most important things to keep in mind about reinforcing children is that the reinforcement must be contingent on the child's behavior. If you provide the reinforcement when the child performed incorrectly, you are essentially saying, "That is the right way." Teachers sometimes reinforce children with the idea that if they receive some reinforcement they will perform correctly. It won't happen. The children will simply shape the teacher into giving away more and more "free" reinforcement.

A basic rule in working with the low performer who is compliant is that you should be reinforcing the child 75 percent of the time. If you are reinforcing the child less frequently, the child is likely to become frustrated and stop working for you. If the child is having a great deal of difficulty in a given task, you may need to switch to a simpler task in order to be able to reinforce the child 75 percent of the time.

Shaping

To shape a motor response involves:

1. Accepting approximations of the response.

2. Shifting the criterion used for accepting an approximation, so that initially crude approximations may be reinforced while later only responses that are quite close to the desired response are reinforced. Ultimately, the criterion is shifted until only perfectly configured responses are reinforced.

If the learner's closest attempt in saying the word *man* is "ba," we will shape. At first we will accept "ba." Later as the learner becomes more proficient, we will not accept "ba." Instead, we will accept approximations that are somewhat closer to *man*, such as "ban." Next, we reinforce only those that are closer: "mban." By shifting our criterion for reinforcing responses in this way, we direct the learner to a final appropriate response: *man*.

The use of shaping. Shaping is primarily appropriate only for teaching motor responses, not for teaching discriminations like what's a ball and what isn't. The overriding rule is that if the learner is *capable* of producing the response called for (in the context of the task) don't shape. If the learner is incapable of following the directions "stand up" we could shape the response somewhat. This condition occurs if the learner has never been observed to produce a motor response, like standing up. If we know of instances in which the learner is capable of standing up, we would not reinforce approximations with the hope that the learner will improve with practice. Shaping in this context simply reinforces inappropriate behavior. That doesn't mean that the learner is not shown the correct response; however, if we provide physical help, we do not reinforce the learner. In all cases, the learner terminates in a standing position. The criterion for producing the response is unwavering. The child must initiate the response from the verbal command without poking. The rule you follow is that if the learner is capable of producing the response to a signal, you have only one criterion for providing reinforcement, a perfectly acceptable response.

Use shaping for establishing new motor responses. If you are trying to teach the learner to produce a *new response* (performing a backward somersault, saying the word *man*, spearing a green bean with her fork, or any response that hasn't been produced before), shaping is appropriate.

The *rationale* for shaping is that the learner is giving you the best response of which she is capable. If you reject that response, the learner will *try something else*; however, the chances are overwhelming that the new attempt will be inferior to the original. Perhaps the learner will wait longer before responding; perhaps the learner will go through some kind of ritual or

"superstitious" behavior (such as blinking, turning the head, squinching the mouth, etc.). *The more demanding your criterion, the faster these undesired behaviors will appear and the more persistent they will be.*

If your criterion is too strict you won't reinforce these responses and the learner will not learn the targeted behavior. If you provide the learner with reinforcement for virtually every response, no matter how far from "perfect" it is, the learner will have no reason to perform better. You are accepting the learner's attempts and are implying that they are acceptable.

The rationale for shaping is that it provides the learner with motivation to do better, to clearly show the direction in which the responses are to change, to make the criterion of performance low enough that the learner receives reinforcement on most trials.

A careful articulation of what is to be shaped and how to do it is necessary because the learner's responses are often "poor" in many respects. For instance, the learner who is trying to say, "That's a ball," may use inappropriate inflections (perhaps a high-pitched voice), inappropriate phrasing (perhaps pausing before the word *ball*), inappropriate stress (perhaps swallowing the vowel sound in "that's"), and inappropriate production of the various phonemes (perhaps saying the sound *zz*, instead of *all*). You can't shape simultaneously on all of these aspects of the production. If you do, you'll find yourself *not* reinforcing the learner on many of the trials. Nearly every trial will be rejected for some reason, and the learner will receive no information about doing things "right," only about what not to do.

The features of the response you're going to change must be identified ahead of time, and you must follow very precise shaping procedures when working with the learner. The fact that these are precise does not mean that they are necessarily difficult.

Begin the shaping program by establishing a baseline that permits you to reinforce 75 percent of the learner's trials.

1. Present the task that is to be shaped 20 times. Present no more than four trials at a time. Reinforce all of them. Videotape the session so that you can study the learner's responses. If videotape is unavailable, have another person observe the learner while you present the task.

2. Identify superior responses. You will note that there are five or six responses that are notably inferior to the others. Also there will be a "better group" of about 12 or 13 quite similar, and perhaps one or two will be notably superior to all the others.

3. For the initial reinforcement:

    a. Make the behavior that characterizes the poorest five not reinforceable.

    b. Make the behavior that characterizes 75 percent of the responses (the middle 10 trials) reinforceable.

    c. Identify the behavior that characterizes the best five trials and make this behavior worth double reinforcement.

d. As you reinforce the learner, note the approximate percentage of trials that leads to double reinforcement.

4. For adjusting reinforcement, remain on the original criterion for reinforcing responses until the learner receives *double reinforcement on 60 percent of the practice trials,* and then shift the criterion for reinforcing the learner:

   a. Identify the top 20 percent of the behaviors that the learner is now able to produce and assign double reinforcement to these.

   b. Identify the response that had earlier led to double reinforcement and assign single reinforcement to these responses.

   c. Provide no reinforcement for responses that previously had earned single reinforcement.

This shift shows the learner the direction in which the responses are being shaped and does so in a way that maintains the correct-response percentage near 70-75 percent.

Illustration. Let's say that we are trying to teach the learner to hold his head up during feeding. We establish a baseline, observe 20 trials, and determine that the learner *typically* is capable of moving his head off the chest and to the right, attaining about a 30-degree angle. On three trials, the learner moved his head far less than this. On two trials, the learner moved his head quite a bit more. Once it moved to the left and up. Another time, it moved up to more than 45 degrees. The three small-move trials were identified as behavior that would lead to no reinforcement. The "average" attempt of moving about 30 degrees or more was designated as single-reinforcement behavior. Movement that was obviously more than the average and that involved movement to the left was identified as double-reinforcement behavior.

The teacher practices working on the behavior before every meal. Social praise (to which the learner was responsive) is used for single-reinforcement. For double-reinforcement behavior, a great deal of praise and "fuss" was coupled with a spoonful of lemon pudding, something the learner found particularly reinforcing. Note that these reinforcers are used because they are effective with the learner. If the learner didn't respond to praise or to lemon pudding, other reinforcers would have to be substituted. The idea behind the selection of specific reinforcers is to find one that is "effective" and another that signifies, "You did a great job."

After three weeks of daily practice, the learner is receiving double reinforcement on 60 percent of the practice trials, which means that the learner is moving his head to the left and raising it to more than 30 degrees. At this point, the teacher shifts the criterion. Moving his head and raising it to more than 30 degrees now becomes the basis for *single reinforcement*. Double reinforcement is awarded for the trials on which the learner holds his head relatively stationary for two or more seconds. (The learner currently achieves this goal on about 10 percent of all trials.) Moving his head 30 degrees or less now becomes a *non-reinforceable response*.

Within several weeks, the learner holds his head at 45 degrees or more for two seconds on about 60 percent of the trials, so the criterion is shifted again. *Note that the learner's responses provide the basis for determining what is reinforceable*. Double reinforcement is now awarded only if the

learner holds his head 45 degrees or more for five seconds. The program would continue to shift criteria until the learner's head remains in a fairly normal position for long periods of time.

One reason this strategy for shaping responses is effective, even with very low performers, is that it provides the learner with information about the way in which responses are expected to change. The frequency of double reinforcers provides information about what to do to receive double reinforcement. Also, it doesn't put pressure on the learner to attempt things he cannot do. When his behavior shows that he has reached a level of performance that calls for a change in criteria, his behavior is evaluated and a new schedule of reinforcement is introduced.

Juxtapositions: What Follows What?

The most difficult concept for teachers of low performers to learn is that a given task is not always the same task. If you present the task of showing the learner a book and asking, "What is this?" and then present the same task later, it is not really the same task, at least from a learning standpoint. One important factor that makes it different is what precedes it. The tasks or activities that occur immediately before it may make the task relatively difficult or relatively easy. Let's say that we presented this sequence of tasks:

> The teacher presents a shoe on a table and asks, "Where is this?"
>
> The teacher presents a bottle on the table and asks, "Where is this?"
>
> The teacher presents a cup on the table and asks, "Where is this?"
>
> The teacher presents a book on the table and asks, "What is this?"

The chances are greatly increased that the learner will fail the last task. The preceding events made the task relatively difficult. The child will tend to answer the question "Where is this?"

The general rule for timing groups of examples is that *when teaching motor skills, juxtapose trials with pauses between them. When teaching conceptual skills, juxtapose trials so that very little time intervenes*. What you do when you teach motor responses is generically different from what you do when you teach concepts or discriminations. This fact is not puzzling if you consider what you are trying to communicate through trials that teach a concept and what you're trying to communicate through trials that teach a motor response. Motor responses are habits—patterns and chains of behavior that are to be produced fluently. The mastery of the skill is characterized by a lot of practice that is not dramatically influenced by conscious directions to your body. To appreciate the problem of learner motor skills and to appreciate the role of reinforcement and shaping, you might try learning a new motor skill such as standing on your hands or juggling three balls. You will notice the following:

1. You persist in the same mistake patterns, even though you know what not to do. Your mind doesn't seem to have the desired control.

2. Massed practice doesn't seem to help over what your body is doing. When you practice trial after trial, you will probably find that you're not improving. After 6-10 trials, you'll probably

find that your performance is deteriorating. It may be much better if you take a break and then try again with another block of 6-10 trials.

3. The probability of producing two "good" trials in a row is very, very low. The first time you successfully get the third ball in the air may be separated by many trials before the second time you achieve this feat. Even though you would like to perform well on the next trial, the good trials come once in a while and they are not apparently the product of "trying harder." They seem to be part of the game. If you keep trying on every trial, once in a while things seem to click and you perform better.

4. An enormous number of trials are needed before you become proficient at the behavior. A healthy teenager may require 700 trials before being able to stand on her hands consistently for 5 seconds. And even after this amount of practice, it is not unusual for one to perform well on two trials and fail on the third.

5. Since good trials come relatively infrequently, it is easy to find "spurious" procedures for producing the response. Perhaps you noticed that you took a deep breath before a good trial. You may continue to breathe deeply before each trial. Later, you may discover that breathing deeply and closing your eyes for a moment seems to be associated with successful trials. You can see a great deal of this type of behavior if you observe how athletes perform. A basketball player at the free throw line typically follows a routine such as, wiping hands on shorts, bouncing the ball exactly five times, balancing the ball in the left hand, shifting to the right, looking down, looking up at the basket, then shooting. Not all of these behaviors are functional. However, they have become associated with success in shooting free throws.

Keep these points in mind. The fact that the learner requires hundreds of trials to master a response does not imply that the learner is abnormal. Expect motor responses to evolve only after a great deal of practice.

The fact that the learner produces one good response and then four poor ones does not imply that the learner is not motivated or that the learner is not trying. This pattern is normal. A good response is typically followed by a poor one and rarely followed by another good one.

This pattern suggests that type of reinforcement used must be designed to keep the learner going, to encourage the learner to continue responding. We should reinforce most of the learner's honest efforts. If we are "stingier" in our use of reinforcement, we're not doing this. We're implying that the learner should continue to work, even though we're apparently not pleased with the learner's efforts. Occasionally, we'll reinforce. The conclusion drawn by most learners, of course, is "It's not worth it." They then try to figure out ways of withdrawing from the activity or seeking other activities that provide more immediate reinforcement. Stingy reinforcement leads to fixation of responses, increased lag or latency before responding, and the increased use of superstitious behavior. If you make the probability low that the learner will succeed, and if you make the reward for success great, you will increase the probability that the learner will develop superstitious behaviors. If you make the reward for success very small or nonexistent, you will promote indifference.

The facts about learning new responses also suggest that we should not rush the learner from one trial into another. If we begin massing one trial after another, the learner will develop error patterns. (Often the learner is perfectly conscious of what she is doing; however, she cannot change the behavior.) We are not allowing sufficient amount of recovery time.

To work on motor responses:

1. Present 4-6 consecutive trials. These may be massed, with one following quickly after the other.

2. Permit the learner a break by going to some other activity for at least two minutes.

3. Return to the original task and again present 4-6 consecutive trials.

Throughout the teaching, follow the shaping procedures.

Discriminations

The problems associated with teaching discriminations are different from those of teaching motor responses. Teaching discriminations implies some *memory* of the response to produce and a knowledge of which details in the example call for a particular response. Note that there is no question about whether the learner can produce the response. The response may be pointing, nodding, performing a familiar response such as standing up, etc. These responses are not new for the learner. They are familiar. They have been produced by the learner before. The instruction does not attempt to teach these responses to the learner, but to teach the learner the "code" for when to use the response. For example, the learner may not know that the utterance, "Stand up," calls for the familiar response of standing up. The response is not new. The discrimination of the utterance, "Stand up," is.

When we teach this discrimination or any other discrimination to the low performer, we must do two things:

1. Communicate as clearly as possible about the nature of the discrimination.

2. Shape the learner's memory so that the learner remembers the meaning of the words that we are teaching.

To achieve both goals, we must control the way that we juxtapose examples presented to the learner. The specific procedures derive from these facts about juxtaposed events:

   a. To make the task as easy as possible, make it as identical as possible to the preceding task and present it without any time delay. "Touch this…Touch this…Touch this…" The wording is the same for all tasks. The series of things touched are pointed to in the same way. The learner's reinforceable responses are the same.

   b. The juxtaposition that is next easiest requires the learner to do the same thing with different examples. (Even though the tasks are not identical, they involve doing the same thing, such as "Touch the shoe… Touch the book…Touch the key.)

c. The juxtaposition of greatly dissimilar examples makes the targeted discrimination relatively the hardest.

Note that these facts apply to situations in which the new discrimination is being taught. To show the learner how a concept or discrimination works, we must present different examples of the concept or discriminations. These examples have something in common. These common features are the basis for labeling the examples with the same name. (All examples of *standing up* have common features; all examples of *cup* have common features; all examples of *under* have common features). In teaching discrimination, our goal is to show the learner what common features exist and require the learner to label the example. Let's say the learner is learning to follow the command, "Touch your nose." If the tasks presented are "Tell me your name…Stand up… Sit down…" "Touch-your-nose," task is relatively harder for the learner than it would be if it were immediately preceded by "Touch your nose" or by "Touch your head."

Showing the common features through examples means that the examples must be *presented quickly*—one immediately after the other. The longer we pause between the presentations of examples, the more we're demanding a stronger memory. The faster we present examples, the less memory we require—the easier it is for the learner to see what is common about the examples.

Examples should be massed. The longer we wait between examples, the more difficult it will be for the learner to remember a name or word we are trying to teach. Also, *the more interference* we put between examples, the more memory we require. If we juxtapose three examples of "What is this?" when we point to a shoe, the last example should be relatively easy for the learner, because the learner has just produced the response "shoe" on the earlier two examples. One way to make the juxtapositions more difficult is simply to pause between trials. If we pause six seconds between presenting the shoe and asking, "What is this?" the second task becomes far more difficult than it would be if we presented the tasks with a one-second pause between them.

A more difficult pattern of juxtaposition would be if we present two examples of a shoe, then present one example of a cup, then present an example of a shoe. Even if the time between presentations of tasks involving the shoe was exactly six seconds, this task would be more difficult than simply waiting six seconds. The presentation of the cup functions as interference, because the learner has produced a response that interferes with the response *shoe*.

In summary, if we present a series of quick positive and negative examples of a concept, the presentation requires the least amount of memory for the details of examples when one example quickly replaces the preceding one. We require less memory when we have the learner use the name on juxtaposed examples.

The memory paradigm. Low performing children frequently do not remember the names of symbols or the labels of objects or relationships that are used in the teaching demonstration. To shape their memory we can use a paradigm that involves four levels of difficulty.

Level 1: Start with model of the correct response and juxtapose examples of the same task.

Level 2: Interfere with one familiar task.

Level 3: Interfere with time and various familiar tasks.

Level 4 (Integration format): Juxtapose task with any task in the daily routine.

Level 1 shows the level that is easiest for the learner; level 4 shows the level that requires the greatest amount of memory for the discrimination or task. The following rules tell how to use the memory paradigm:

1. Start with level 1. First present the task you expect the learner to perform. Then juxtapose examples of the same tasks until the learner performs correctly on three or more consecutive trials.

2. Repeat this procedure for levels 2 and 3. Move to the next level immediately after the learner performs on three or more consecutive examples of the earlier level.

3. Correct mistakes immediately.

To correct any mistake:

   a. Tell the learner the answer.

   b. Return to level 1.

   c. Present one or more tasks from each of the lower levels until you reach the level at which the mistake occurred or until the learner makes a mistake on a lower level.

   d. Repeat steps *a-c* above if the learner makes a mistake during a correction.

4. When presenting level 4 tasks, no warm-up is provided. You simply present the task in various settings and at unpredictable times. Anything that is taught is reviewed daily as a level 4 task.

Here's an example of each level. The teacher is trying to teach the learner to answer the question, "What day is today?" Note that the teacher immediately proceeds from one level to the next. The teacher begins with a model of the task.

(Level 1) My turn: What day is today? Tuesday. Your turn: What day is today?…Yes, Tuesday. Again: What day is today?…Good. What day is today?…Good answering. What is today?…Good.

(Level 2) What day is today?…What color is the wall?…Good. What day is today?…What's your name?…What day is today?… What color is the grass?…What day is today?…

(Level 3) What day is today?…What's your name?…What color is the wall?… What day is today?…What color is grass?…What color is the wall?…What day is today?…What's your name?…How old are you?…Touch your nose…Stand up…What day is today?

(Level 4) The learner is engaged in coloring. The teacher sits next to the learner and says: "Think big. What day is today?" The learner returns to the coloring activity. The teacher interrupts again after another 5-15 minutes with the same question.

Levels 1-3 are shown as discrete entities in the description above. In actual practice, you would proceed from one level to the next without interruption. For example: "What day is today?…What day is today?…What day is today?...What's your name?…What day is today?…What color is grass?…What's your name?…What day is today?"

Note that the use of the paradigm permits you to maintain a rate of correct responses of at least 75 percent. Therefore, you can work longer on discriminations at one time than you can on motor responses.

When the learner is working on levels 1-3:

1. Try to mass about 20 trials at a time (one immediately following the other).

2. When leaving the activity, model the correct response.

3. Go to another activity for at least 5 minutes before returning to the target task. This activity should be quite different from the target task. If the target task involves naming an object, the change-up or intervening activity should deal with doing something. Note that what is done during the period does not have to be trivial or some form of "large motor movement." It must simply be different from the activity that you are working on.

4. Return to the target task for another group of about 20 trials, starting with level 1 and proceeding to the highest level you can achieve in about 20 trials.

5. When the learner is working on level 4, present a task on which you're working at least 5 times a day.

Note: The difference between the Integration format (level 4) and the earlier levels is that for level 4, there is no "warm up" or progression of difficulty from the standpoint of memory. The target task is presented "cold" in different situations (eating a snack, working on a puzzle, engaged in learning something else, etc.).

Correction. Here's an example of correction. The learner is working on level 4. When asked, "What's your name?" the learner is unable to respond.

"John…your name is John. What's your name? (Level 1) Touch your nose…Good. What's your name? (Level 2)…Good. Touch your shoe…Touch your nose…Touch your head…Good. What's your name? (Level 3)…Good remembering. I'll ask you later. What are you going to say when I ask, 'What's your name?'…Good."

The learner's performance dictates how many times the teacher will present easier juxtapositions and how quickly the teacher will return to the level on which the mistake occurred. If the learner has trouble with an easier level, the teacher will continue to work on that level until the learner performs adequately. If the learner does not have trouble on an easier level, the teacher returns quickly to the level on which the mistake occurred. A level is appropriate when the teacher is able to reinforce the learner on at least 75 percent of the trials. The use of the memory paradigm assures that you will reinforce the learner at this percentage. If the learner has trouble, you work on an easier level until the learner's performance suggests that you can again return to a higher level.

The use of the memory paradigm is based on the idea that the same task is not the same in all contexts and that the learner will develop an adequate memory for a task if provided with enough practice. How much practice? The learner's behavior answers this question. If the learner must work for 500 trials before reaching level 4, we will provide the 500 trials and do so in a way that assures a high percentage of correct responses. If the learner needs only 40 trials, we will provide these and no more. As soon as the learner demonstrates proficiency on one level, the learner will move to the next.

For the memory paradigm to work, the task that you use to interrupt presentations of the target task must be perfectly familiar to the learner. If the learner makes mistakes on these tasks ("What color is the wall?"), then you will become engaged in a very difficult correction cycle. You can effectively correct only one thing at one time; therefore, the interruptions must be tasks that are familiar. (In practice, the learner will sometimes fail a task that is supposed to be familiar. To correct, tell the answer, return to level 1, and do not use this task as an interruption when working on tasks for levels 2 and 3.)

Diagnostic Teaching

The expression "diagnostic teaching," which is often used in working with low performers, is a ridiculous term, frequently implying that the teacher wastes enormous amounts of time engaging in quasi-formal testing and activities that have a questionable information yield and that certainly don't make for good instructions. The procedures for sound diagnostic teaching should be employed by all teachers; however, these procedures are very demanding. They demand close attention to the learner's responses and they demand responses that are logical.

Figure 4.2, presents a paradigm for diagnostic teaching.

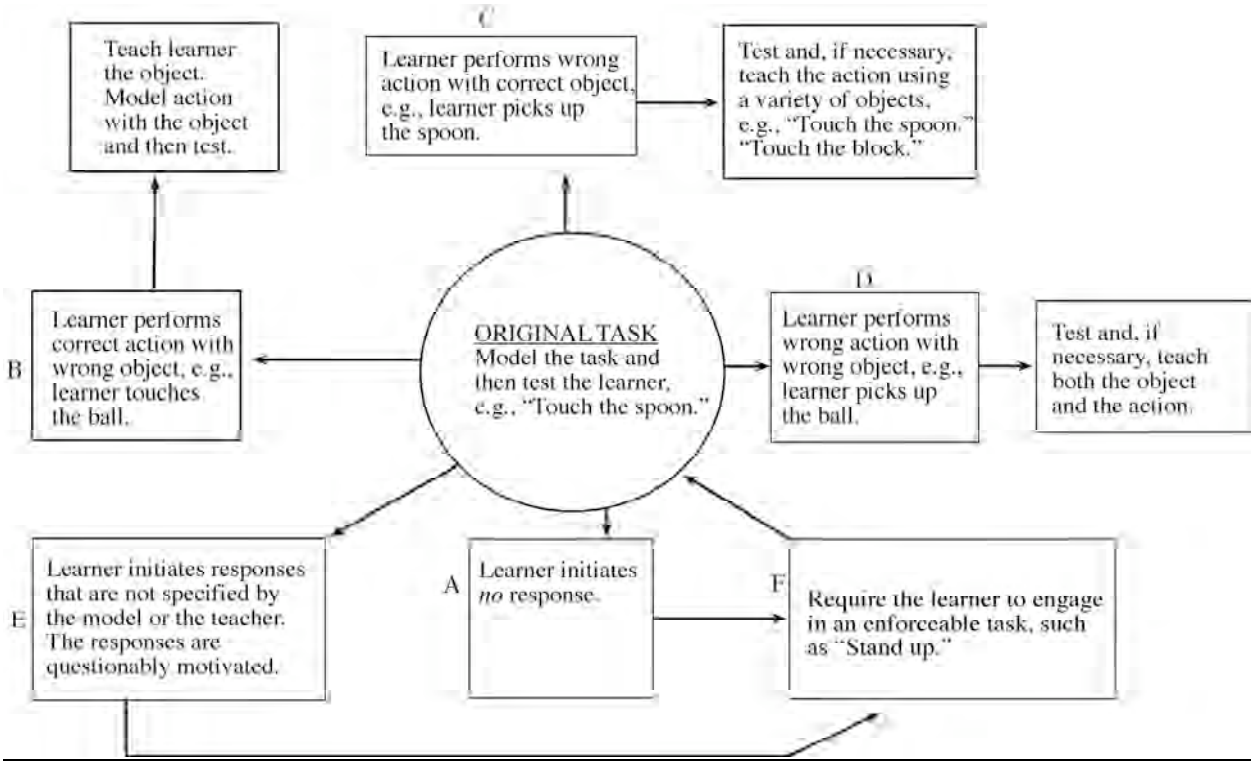


Figure 4.2

Paradigm for Diagnostic Teaching

This figure shows the various things that can go wrong when a task is presented to the learner. The learner may produce no response (box A). The learner may produce a response that involves the correct action but the wrong object (box B). (For example, you tell the learner to pick up a spoon, and the learner carries out the action of picking up but she picks up something other than a spoon.) The learner may carry out the wrong action with the correct object (box C). (You instruct the learner to open the door, and the learner knocks on the door.) Finally the learner may perform the wrong action with the wrong object (box D). (You tell the learner to pick up the spoon and the learner knocks on the door.)

In many situations, the response may be questionable (box E). Is the learner trying and attending, or is the learner "testing" you? For example, you present the task "Touch your cup," to the learner and the learner inches her finger toward the cup and some other object. You're not sure whether she is unsure about the meaning of your instructions or if she understands the instructions but she's testing you.

Using enforceable responses. As Figure 4.2, box F indicates, you use enforceable responses when the learner produces no response or when the learner produces a questionable response. The purpose of presenting these tasks is to rule out the possibility that the learner is not trying. An enforceable response is one that we can physically correct.

Stand up. "Stand up-sit down" is the closest thing to magic in the instructional situation. It is an eminently enforceable response. It can be presented rapidly. It can be used as either a punishing sequence or as a reinforcing activity.

The format for "stand up" is presented in Section III (Format 6.1). Our purpose here is to describe how it is used. It is an enforceable task. You present a series of tasks—"Stand up…sit down…stand up…sit down" if the learner is noncompliant. You then immediately return to the original task and repeat it to test the compliance and to diagnose the extent to which the learner is trying.

The tasks are presented at a somewhat unpredictable rate, with occasional pauses, *until the learner performs on at least four consecutive trials*. This means that the learner does not engage in any severely disruptive behavior (biting, hitting, attempting to run away), requires no physical prompts or restraint, waits for the teacher's instructions, and carries out the commands with little latency.

Back to the original task. When the learner has met the criterion of performance, the teacher *immediately* presents the original task. By presenting the original task after the successful series of "stand up" tasks, you increase the probability that the learner will respond to this task with the same willingness that the learner exhibited on the preceding tasks. The learner *will try*. There will be very little doubt about whether the learner is motivated. If the learner makes a mistake when the original task is repeated immediately after the learner performs successfully on stand-up tasks the mistake is real. It does not stem from the learner's unwillingness or reluctance.

Stand up for no response. The same procedure used for questionable responses is appropriate for no response. If the learner does not respond during any part of the lesson, immediately go to an enforceable response: "Stand up…sit down." Repeat the task until the learner has performed correctly on at least four consecutive trials. Then *immediately* present the original task.

Stand up for pre-correction. If the learner continues to make mistakes on a particular type of task, or if the learner seems to constantly lapse when tasks of a particular type are presented, pre-correct. Do this by presenting a series of stand-up tasks *before* you present the target tasks. The learner will try on these tasks, and the information you receive will probably validly reflect what the learner can and can't do. If the learner makes a mistake, the learner does not understand what to do.

Right action, wrong object (Box B). Errors of this type are very common because many tasks that you present require a verbal answer or touching objects. You present a shoe and ask, "What is this?" The learner answers, "A sock." The learner carried out the appropriate action; he answered the question with the name of something. He named the wrong object, however. Or you present this task, "Hand me the cup." The learner hands you something, but it is not a cup.

To correct these errors, *tell the answer or show the answer*. Then present a model followed by the test. For a model step, you present the task and the answer. (If necessary, you present the task and the shill models the answer.) To model the first task above, you would say, "What is this?" Either you or the shill would then answer, "A shoe." To test the task, you would again present the question; however, the learner would be required to answer this time. "What is this?…"

For low-performing children, multiple models are frequently useful. They should be presented fast and rhythmically: "My turn: What is this?…A shoe. What is this?…A shoe…What is this?…A shoe…Your turn: What is this?…"

Remember, when you model, you present the task and the answer or response. When you test, you present the task but the child must respond.

Wrong action, right object (Box C). If the learner responds with the wrong action (you say "Touch the cup," and the learner picks up the cup), correct by modeling a series of tasks in which you touch. Then test:

Model: Point to a cup. Say, "Touch." Touch the cup.

Point to a book. Say, "Touch." Touch the book.

Point to a piece of paper. Say, "Touch." Touch the paper.

Point to a pencil. Say, "Touch." Touch the pencil.

Test: Immediately after completing the sequence above, point to the pencil again. Say, "Touch." Prompt the child to touch. Repeat with the various objects until the learner has touched four consecutive objects.

Leading. You may have to lead the learner. *When you lead, you prompt the response or help the learner produce it.* For instance, the learner may try to pick up the object instead of touching it. You would restrain the picking-up response and reinforce gentle touching. (You would also switch to using objects that are not easily picked up with one hand, such as large books).

Return to the original task. When the learner has performed correctly, present the original task. Precede it with a model. "My turn. Touch the shoe…" Then test. "Your turn: touch the shoe…"

Wrong object, wrong action (Box D). The correction for the wrong object and the wrong action implies a rather involved correction. For example, if you say, "Touch the shoe," and the learner picks up the cup, you must teach "touch," and you must teach, "shoe." If the motivation behind the response is questionable (if you think that perhaps the learner is trying to put you on), go to an enforceable task ("Stand up"). Return to the original task. If the response persists, first teach "touch."

Present a series of objects. Model the touching. Point to an object, and say, "Touch." Then touch the object. Repeat for all objects.

Test the learner on the series of objects. If necessary, help the learner produce the touching response. After the learner has performed correctly on at least four consecutive tasks, model and test the original task.

Model: "My turn: Touch the shoe…My turn again: Touch the shoe…"

Test: "Your turn: Touch the shoe…Touch the shoe…"

Using the memory paradigm. If the learner's response is shaky on any of the corrections, use the memory paradigm after the correction has been completed.

Begin with level 1: "Touch a shoe…good. Touch a shoe…Very good."

Go to level 2: "Stand up…touch a shoe…good.

Clap!…touch a shoe…good.
Sit down…touch a shoe…very good."

Go to level 3: "Touch your nose…stand up…sit down…touch a shoe."

The use of the paradigm firms the response and gives the learner an opportunity to integrate knowledge of the new task with other familiar tasks. The other tasks that are presented for interruptions are familiar. These permit the learner to see how the new task, "Touch the shoe," relates to familiar tasks such as, "Touch your nose."

Remember, if tasks are shaky, use the memory paradigm.

Complex tasks. When you work on complex tasks, you frequently find yourself having to shape some response, correcting a discrimination (involving a response that the learner is capable of producing), and possibly dealing with non-compliant behavior. For diagnostic teaching you need precise information. Therefore, you must first make sure that the learner is trying. Follow these steps:

1. First present stand up-sit down to assure that the learner is complaint.

2. Work on the discrimination task. Correct and then firm it by processing it through the levels of the memory paradigm.

3. Work on any motor responses or shaping.

Note that if the original task failed because the learner is perfectly incapable of producing the response, you would not work on the discrimination. You would teach the motor responses.

Diagnosing motor problems. When you want to find out whether the learner is actually capable of producing a response, the use of stand up-sit down will again provide reliable information. Bring the learner to an acceptable criterion of performance on four or more consecutive commands. Then immediately follow with the task in question. If the learner understands the instructions but does not perform correctly, a motor problem exists.

Responding on the spot. When you're in the teaching situation, you frequently don't have time to work out the most precise correction. You must do something on the spot. Later, you can figure out a sequence that will be more careful. To be effective, use this procedure:

1. Provide the correct answer.

2. Go to a series of stand-up tasks.

3. Model the original task. Provide the answer.

4. Test on the task.

5. If the learner is weak on the test (requiring more than one or two trials before producing the correct response) follow successful performance on the test with the use of the memory paradigm.

This procedure is somewhat laborious, but it will work effectively.

SECTION III

Chapters 5-9

Section III contains specific information about teaching basic discrimination skills. The section begins with procedures for assessing the learner's behavioral tendencies and skills, followed by specific formats or scripts for teaching basic commands, *yes-no*, and object identification. Accompanying important formats is a list of critical behaviors. Pay particular attention to these criteria.

This section covers the following skills: Diagnoses and Placement, Teaching Basic Commands, Teaching Touch "X," Teaching *Yes-No*, Teaching the Card Reinforcer, and Working with the Children in a Group. Each skill assesses the rationale and procedures for a section, how that section fits into the total program, critical behaviors for teaching the information in that section, and formats to use when teaching the children each of the major skills in each section.

Each part begins with a description of the skills to be taught, the rationale for teaching the skills, and additional information regarding materials or procedures that are necessary for teaching those skills. Accompanying some scripts is a list of critical behaviors. These critical behaviors are the behaviors that are most important for you to master before teaching the scripted exercise that is presented. These are also the behaviors that you should check yourself out on as you continue to practice and teach the scripted exercises. The behaviors listed in the critical behaviors lists are important for execution of the tasks with maximum efficiency.

The description of each exercise (format) specifies whether you are to work with a child individually or in a group, what the setup is for the exercise, the schedule for working with the child (how many times per day this targeted task should be taught), and any additional materials that you will need to teach the exercise. Learn the exact wording and movements called for in the exercises. Many exercises include such words as "Good working," after a segment in which the child has performed correctly. This wording is included to guide you. You must give the child verbal reinforcement after the completion of a task or task segment. Remember to tell the children exactly what they have done correctly, by saying, "That's good talking," you are telling

the child exactly what you wanted him to do in the task; you are emphasizing the behavior that you wanted to happen.

Several of the exercises are followed by lists of additional examples that should be taught using the same format of the exercise. For example, the after presenting the sequence for teaching common object identification you are to continue to introduce additional common objects using the same exercise format until you have taught all of the objects that appear on the list of instances that you select. Your lists should always include objects that the child will work with each day and all objects that will be used in other facets of the child's instructional program.

SECTION III

Chapter 5
Assessing Behavioral Tendencies and Skills

Assessing Behavior and Compliance

To begin instruction with the child, you should know precisely what the child knows, which tasks or activities can be reliably presented to the child, which things the child doesn't know (such as the meaning of *yes-no*), and finally, how the learner is going to respond to instruction. Often a low-performing child has severe behavior problems. Frequently, the child has learned to control adults. Preparing for instruction does not involve norm-referenced tests. It involves two basic procedures:

1. Assessing the learner's behavioral responses to the teacher—responses to being treated nicely and to faster-paced more businesslike demands.

2. Assessing the learner's knowledge, with particular emphasis on the most fundamental skills.

A good plan is to videotape the assessment. It will provide you with information about the behaviors you will have to address.

a. The first time you meet the child, have the child sit in a chair with a shill behind him. Make sure you have some form of quick reinforcers the child will probably like—m and ms, cereal, popcorn. The chair should not have a hard back (A stool is preferable to a chair if one is available.) Sit in front of the child. Talk to the child in a conversational way. "Hello there, Timmy. How are you today?…You're a fine looking boy."

b. Give the child a series of simple tasks. Use a lot of social praise, no punishment, and SLOW PACING (tasks presented at the rate of about six per minute). Only tasks that are in italics are true tasks. "*Timmy, stand up*…Come on, stand up… here, let me help you. That's standing up. Here's a candy for standing up…you don't want the candy. *Timmy, sit down*…Oh, that's good sitting down."

Try to use the tone and approach of a doting parent or a "reinforcing teacher." The idea is for you to play the role of others who have worked with the child.

Observe this phase of the diagnosis and note the child's responses. Does he look away from you when you praise him? Does he push your hands away when you pat him or give him a hug? Does he whine, yell, or scream? Or is he responsive and attentive? This phase of the diagnosis provides the baseline behavior for the learner in instructional situations. It also shows how the learner responds to situations that are not particularly "threatening" and that place only modest demands on his attention and performance.

c. After no more than one minute of the "baseline" treatment, become much more brisk in your presentation. Talk in a sharper voice. Increase the pacing of the tasks. Don't yell at the child. Merely step up the "spirit" of the instruction. "Timmy, stand up." Prompt him briskly. "Up…that's it. Sit down…Good sitting. Stand up…come on. Stand up…sit

down…that's good." Hand him a reinforcer from time to time, but maintain swift pacing (at least 11 tasks per minute).

Present 11-15 tasks (clap your hands, touch your nose, stand up, and sit down. Drop any tasks the learner is apparently not able to perform. Note the learner's behavior. The behavior that he exhibits now is probably his "best" behavior.

If the child's behavior deteriorates during this phase of the diagnosis, you may conclude that the child probably has a pattern of cooperating for perhaps a minute and then "turning off."

If his behavior maintains on a par with his step *b* behavior, the child responds to positive reinforcement. (Pacing is a strong positive reinforcer.) If the child is reasonably cooperative during step *c*, he will probably not be very difficult to work with.

In summary, the information that you received from step *c* provides you with information about how the child is prepared to work in the instructional setting *now*. Step *b* provided you with information about the child's standard behavior; step *c* shows you what he will do with the *best* instructional techniques that you can provide—good pacing and positive reinforcement. It therefore shows his best performance after the first minute or so of instruction.

d. Provide the child an opportunity to show you his very worst behavior. Do this by again slowing the presentation and reverting to your step *b* behavior. When you go back to this behavior, the child's deviant behavior will increase. You've taken some of the reinforcement out of the presentation. The child wants to get out of the interaction with you, so he'll try some of his tricks. Note what he does. He may engage in some stereotyped behavior; he may begin to scream, cry, scratch, or simply go blank. Give him ample opportunity to show you his most deviant behaviors. The behaviors that he is now showing you are those that have serviced him well in the past. These behaviors have worked well.

Don't let the child escape from the setting, but don't become punishing. Merely continue with your step *b* behavior. "Now Timmy, don't spit at your teacher…Stand up, Timmy. Oh come on, Timmy, turn around like a good boy and stand up…Here, let me help you…" Note the child's behavior.

e. Step *e* is presented only if the child performs poorly on step *d*. When the child *doesn't* respond, pull him to a standing position. "I said, STAND UP… NOW SIT DOWN." Use fast pacing mild reinforcement if the child performs without prompting, intermittent but vigorous assistance if he doesn't perform. Use your voice to let the child know that the commands are quite serious. Raise your voice at the child when he doesn't perform.

Note the child's responses. What you are doing in step *e* is putting the child's habitual behaviors on extinction. You are showing him that his very best tricks don't work. A typical response when a child's behavior is put on extinction (that is, the response is being punished instead of reinforced) is for the response to increase in frequency, magnitude, or both. (See Chapter 4, Figure 4.1.) In other words, you are showing the child that his tricks are not working. Instead of acquiescing, you are demanding.

The extent to which he tries shows you just how resistant the child is. The behaviors that he exhibits are those that he considers the best for extricating himself from situations such as the one in which he now finds himself. If the child does not perform without assistance on "stand up" after ten minutes of intermittent assistance, he has strong habits. If he bites or tries to bite during the punishment session, biting is his best trick. If he curls up into a ball and screams, curling and screaming is what he considers to be his best trick.

Within the *bounds of humanity*, you would stay on the step *b* behavior until the child lets go of his best tricks. When the child stands up and sits down four times in succession *without prompting and without exhibiting disruptive behavior,* you have established rapport with that child. You know what his best tricks are, and he knows that his best tricks won't serve him when working with you. The fact that he has given up his best tricks is his way of saying that he'll probably never challenge you again as seriously.

After 10 minutes of enforced compliance, stop for about a minute. Then assume step *c* behavior (positive reinforcement and fast pacing). Alternate between steps *c* and *d* until the child responds consistently (step *f*). A session can last a total of 30 minutes.

More important than winning the encounter is the information that the child gives you during the session. Sometimes children quickly let go of their tricks after only a few trials in step *e*. These children are "sensitive" and easier to work with. Some children have very little reaction to the step *e* treatment. These children have received a great deal of physical punishment and will probably not respond well to it. They are conditioned to tolerate punishment. Other children will persist for some time and then quickly let go of their tricks. Others will apparently fall to pieces and seem incapable of responding correctly even when they apparently want to. However, you'll probably discover that they can respond appropriately if you give them a little break (with step *c* treatment).

The diagnosis must be modified for different children. If a child is not cooperative on step *a*, there is little point in continuing with the other steps. The child is showing you that his standard of behavior is so uncooperative that you can't work with him. You would immediately switch to a step *e* approach and find out his very best tricks for getting out of the situation and also find out how strong his behaviors are.

If the child is reasonably cooperative is steps *b* and *c*, continue with step *d*, but don't go into step *e* unless the child begins to act up seriously. Some low-performing children respond well to positive reinforcement. (Some respond beautifully to the reinforcing-mother routine and not as well to the fast-paced routine.) If the child shows you that he is responding reasonably well to positive reinforcement in step *d*, which means that he is attending and following commands you issue with a minimum latency in response, do not move to step *e* treatment. The information that this child gives you indicates that you will have no serious problems with him and that you can probably work without the use of enforced compliance.

Summary of Assessing Behavioral Responses

The child sits in a chair without a hard back, or on a stool.

a. Begin the task in a conversational voice.
b. Vary your pacing. Start slowly.
c. Become brisk.
d. Again slow your pace to your first pace.
e. If the child is uncooperative, enforce compliance.
f. Once the child cooperates, continue alternating between steps *c* and *d* until the child responds consistently.

Format 5.1:
Assessing a New Child's Behavior

The script shows your responses to positive behaviors.
Record the child's performance in steps b through f.
Ratio 1:1. Shill may be needed.

a. Seat the child on a chair or stool.
Seat the shill behind the child.
Ask child simple questions, such as
WHAT'S YOUR NAME?
DO YOU LIKE ICE CREAM?
CAN YOU CLAP YOUR HANDS?

b. *Use slow pacing.
[child's name], STAND UP. THAT'S GOOD.
_____, TOUCH YOUR NOSE NICE WORK. GOOD JOB.
_____, SIT DOWN. NICE WORKING.
_____, CLAP. YOU'RE DOING VERY WELL.
STAND UP. VERY GOOD.
SIT DOWN. VERY GOOD WORK.

c. *Use fast pacing.
_____, STAND UP. GOOD.
TOUCH YOUR NOSE. NICE.
SIT DOWN. OKAY.
_____, CLAP. GOOD JOB.
_____, STAND UP. VERY GOOD.
_____, SIT DOWN. GOOD WORK.

d. *Use slow pacing.
STAND UP. THAT'S A GOOD JOB.
TOUCH YOUR NOSE. NICE WORK.
SIT DOWN. GOOD WORK.
_____, CLAP. GOOD JOB.
_____, STAND UP. VERY GOOD.
_____, SIT DOWN. GOOD WORK.

e. *Use fast pacing. Repeat step c.

f. *Alternate slow and fast pacing as you repeat steps b and c until the child is responding consistently.

*	Use the shill at these steps (b-f) to prompt the child to respond if the child does not respond in approximately three seconds. Praise only those responses that are initiated by the child and that conform to the task you presented. Do not praise the learner if the shill enforces the response.

Assessing Knowledge

The assessment of the child's compliance does not provide information about the child's knowledge. A placement test that assesses knowledge appears on page 72 (Format 5.2). The results of the Placement Test will determine where each child can begin the program.

Critical Behaviors

- No shill is needed.
- Seat yourself close to the child.
- Present each item in a direct, matter-of-fact tone of voice.
- Indicate P for pass and F for fail on each item that the children take.

Note for number 2 accept either foot, not both. For number 3 and 5 accept only both ears, both knees.

Tasks 1 through 6 sample the easiest skills in the child's repertoire. These tasks are typically those that are usually taught in the home and are usually mastered by three-year-olds. Therefore, these tasks represent those that have probably been presented to the child most frequently over the years. The child's performance on these tasks indicates the success of the training he has received.

Note the child's performance on these tasks. If she performs acceptably on all items 1 through 6, she has mastered these "elementary skills" and probably a host of others of equal difficulty, such as identifying "shoe," "mommy," etc.

If the child says things as she touches the object, she may not understand the meaning of your instruction. Note whether her talking is stereotyped. For example, she may say "nose" as she touches her nose, "foot" as she touches her foot, etc. This pattern would indicate that the child might not have a clear idea of the difference between tasks that call for a verbal response and those that don't.

The child may use other stereotyped statements, such as asking a question after touching an object. "Is this your nose?"…Is this your head?" Note whether the child misuses pronouns, whether he repeats what you say, whether he tends to follow the same verbal routine when touching each object.

If the child confuses objects (touching his mouth in response to the command, "Touch your nose"), he probably has serious conceptual confusions. Note the commands that he confuses. After he makes a mistake, you may correct him, but don't labor the correction. Try to reinforce the child for responding. If you labor corrections too much, the child may balk and refuse to continue. "Here's your nose right here…That's the way to touch it…Timmy, touch your foot…Your foot." Accept either foot, not both. For items 3 and 5 accept only both ears, both knees, respectively.

Format 5.2
PLACEMENT TEST

Make a copy of this form for each child. No shill is needed.
Ratio 1:1

			Notes
1. TOUCH YOUR NOSE.	P	F	
2. TOUCH YOUR FOOT.	P	F	
3. TOUCH YOUR EARS.	P	F	
4. TOUCH YOUR HEAD.	P	F	
5. TOUCH YOUR KNEES.	P	F	
6. TOUCH YOUR MOUTH.	P	F	
7. WHAT IS YOUR NAME?	P	F	
8. SAY: COW.	P	F	
9. Hold up a spoon. WHAT IS THIS?	P	F	
10. IS THIS A TIGER?	P	F	
11. IS THIS A KNIFE?	P	F	
12. IS THIS A SPOON?	P	F	
13. PUT THE SPOON UNDER THE TABLE.	P	F	
14. PUT THE SPOON ON THE TABLE.	P	F	
15. HOW OLD ARE YOU?	P	F	

TOTAL: _____

Items 7, 8 and 9 are the first items that REQUIRE a verbal response. Note the child's responses to these items and compare his performance on tasks 1 through 6.

Does the child answer the question, "What is your name?" Does he say, "Your name?" (which would indicate echolalia). Does he make a statement that shows pronoun confusion, "Your name is Timmy."? Does he produce some inappropriate motor responses, such as touching you?

Item 8 gives a further test of echolalia. A child may not produce an echolalia response to items 7 ("What is your name?") and yet produce one to item 8 (Say, "Cow." Child's response: "Say cow."). If this is the first item on which echolalia is exhibited, it shows that the child's echolalia pattern is not very strong. He has merely been mistaught about what is expected when somebody tells him to say something. Echolalic performance on this item points out one of the things you're going to start working on—appropriate responses to directions about saying things.

Also, note the child's articulation problems. Does he say things that are intelligible, or is his speech impossible to understand? The typical pattern of the child who is not actually autistic but who hasn't been taught basic language skills is to speak fluently but in a perfectly unintelligible manner. This child will imitate appropriate inflections and will usually respond with more than a single word. Also, he'll tend to make side observations: "I dot to du to to tod."

Items 10 through 12 test the child's understanding of *yes* and *no*, as well as basic response conventions. Do not prompt the child with inflections, head nod, or other body cues in items 10 through 12. Note the child's responses.

If the child fails items 10 through 12, he doesn't have an understanding of *yes* and *no*. Expect many of the lower-performing children to fail some of these items.

The way in which the child fails the items provides you with a great deal of information. The child may simply repeat what you say. For example, you say, "Is this a tiger?" and the child may respond, "A tiger?" If he does this, ask him more urgently, "Well, *is* it a tiger?" Tell me.
The child may identify the object. For example, when you say, "Is this a tiger?" he may respond, "Spoon." If he does, repeat the question, "But is it a *tiger*?" You may now find that the child says, "Tiger," which would indicate that he probably doesn't have a firm understanding of *yes* and *no*.

The child may respond, "yes" to all three *yes-no* items. Less commonly, he'll respond "no" to all items. Either pattern would indicate that although he understands the kind of response called for by a *yes-no* question (the response *yes* or the response *no*), he doesn't understand the relationship between the *what* question (What is this?) and the other *yes-no* questions. Because there are only three items that test *yes-no*, you may present additional items to determine which pattern the learner is following. Use items like, "Is this a car? Is this an airplane?"

Note whether the child is able to perform on the preposition tasks (13 and 14). These tasks do not thoroughly evaluate the child's understanding of prepositions, but they indicate whether the child is used to listening to words other than those at the end of an utterance. Some children will be able to perform on a variety of tasks in which critical information comes at the end of the

sentence ("Touch your nose…touch your shoes"); however, they fail most preposition items because they are not proficient at attending to words in the middle of the sentence. By comparing the learner's performance on the preposition items with that on the items in the easiest group (1 through 6), you can get an idea about whether the child has a problem of attending to words in the middle of sentences.

Expect most of the children you work with to fail item 15 (How old are you?). Note the kind of response they produce. Do they answer with a number? Do they tell you that they don't know? Or do they answer by saying something that has nothing to do with the question? For example, do they answer by saying their name, by pointing to some object, or by saying something like, "I like you"?

Below is a quick summary of the information provided by the test:

Items 1-6:	Can the child carry out the most basic commands? Does the child use stereotyped statements as part of his response? Does the child mix up pronouns (saying "your" instead of "my")? Does this child confuse some of the body parts presented in the test?
Items 7-9:	Is the child echolalic? Is the child's speech intelligible?
Items 13-14:	Can the child handle commands that involve prepositions? Does he fail these items but do fairly well on items 1-6? Does he use stereotyped statements as part of his responses?
Items 7-15:	Does the child give the kind of responses appropriate for each item (answering with a name for 7, and with a number for item 15)? Does the child give the correct response for each item? Is he echolalic (repeating part of the question you present)? Does the child seem to follow a pattern of responding ("yes" to all items, "no" to all items, alternating between "yes" and "no")?

Placement Criteria

Children who miss 10 to 14 items will begin at Phase I (Chapter 6). These children will work initially on simple commands and object identification.
Children who miss only 6 of the later items (7 through 15) begin the program with *Yes-No* (Chapter 7). It is assumed by these children's performance on the Placement Test that they can follow simple commands and that they know some common objects and body parts.
Children who miss four or fewer items on the placement test begin in *DISTAR Language I (Language for Learning).*
.

SECTION III

Chapter 6
Presenting Basic Formats

Presenting Tasks

There is an enormous difference between understanding what should be done to teach children and actually applying the techniques. Precision teaching occurs only if all variables are controlled—what you say, the pacing of your presentation, the cues that you present by moving your mouth or hand, and the way you respond to what the learner does.

It takes patience to become a good presenter; however, the most important attitude to learn is that when you work with low performers, you must act. Try to remember these points:

1. Do not let your real feeling show. To be a successful teacher of low performers you have to be a good actor. If the situation calls for the use of harshness, act angry — don't *be* angry. When the child successfully performs on something that has been troublesome, act delighted. Don't be grudging when you should show excitement. Don't be stingy with your show of pleasure. Do what is right for the situation. Try to view the learner as a very difficult challenge that can be successfully met only if you do exactly what is needed in various situations—including your responses.

2. Exaggerate your responses. For whatever reason, the learner has not learned normal responses to humans and to situations. The child doesn't laugh when other children would laugh, doesn't respond to your voice ("Hey, Mary!") the way other children would. For you to show the learner how to perform, you can't be subtle. Talk louder than you would if you were working with an average child. Reinforce more vigorously. Show greater disapproval for behaviors that you consider unacceptable. For your communication with the learner to be successful, the learner must attend to you. Exaggerate all aspects of that communication and the learner will pay attention.

3. Model the kind of response that you expect the learner to produce. If you want children to respond to a dress-up game in a particular way, model how they should respond. Sit down; become a member of the group as your aide presents the activity. Behave precisely the way you want the children to behave. If the children are supposed to be having fun, act as if you are having fun. If the activity is supposed to be reinforcing, do what is called for to receive reinforcement and show off the reinforcement the aide gives you each time you perform (the same reinforcement the children would receive for the same kind of performance). If the task is to be handled in a particular way, act a little triumphant when you perform correctly.

For acting to be successful, it must be combined with many other technical skills. You must know what you're going to present, how you're going to respond to correct responses, to incorrect ones, and to behavior that is unacceptable.

The formats presented in this section provide the behavioral skeleton of what you are to do. Before working with children on any new format, master the format so that you can direct almost

your full attention to the child or group of children you are teaching. The following steps will provide you with the kind of practice necessary for each format before you teach it for the first time:

1. Read the format.
2. Review the critical teaching behaviors.
3. Rehearse the pacing of the statements that you are to make and the gestures that you are to use.
4. Practice the entire format, several times.
5. Check your performance against the list of critical behaviors presented after each format.

If possible, practice with another adult. During the first phase of practice, your partner should respond as the child, always giving correct responses. Your partner should give you feedback as to your execution of the format in comparison to the text and the critical behaviors. You and your partner should take turns playing the roles of teacher and child.

After you can fluently present the format as written, practice the format with corrections. Corrections are specified for mistakes the children are most likely to make. Anticipate that you will have to present each correction. If the correction involves the use of a shill, a third person should perform the role of shill as you and your partner practice the formats. Your facility in executing the corrections will make a great deal of difference in how efficiently you work with your lowest-performing children. Here is the procedure for practicing corrections:

1. Rehearse the entire format with your partner responding as the child, making no mistakes.
2. Read the specific mistake and the correction indicated for it.
3. Memorize the steps in the correction.
4. Practice the format with your partner making the mistake. Make the appropriate correction.
5. Continue to practice the corrections until you can respond automatically to any of the specified mistakes.

Timing is important. As soon as the error is made, go immediately into the correction, and then return quickly and smoothly to the appropriate step in the format.

Teaching Basic Commands

There are two main groups of the commands. The first group consists of "global" behaviors like stand up, come here, and hand me. These are discussed on pages 79-86. The next type of behaviors involve discriminated responses, such as "Touch the ball…touch the monkey…" These are discussed on pages 86-92.

The first two commands to teach are "stand up" and "sit down." As soon as the child is firm on stand up-sit down, the commands tasks will expand to include "come here," "clap," and other commands.

Each basic command is presented through three formats. The first format is the "teaching format." It establishes the appropriate behavior in response to your instructions. If the command

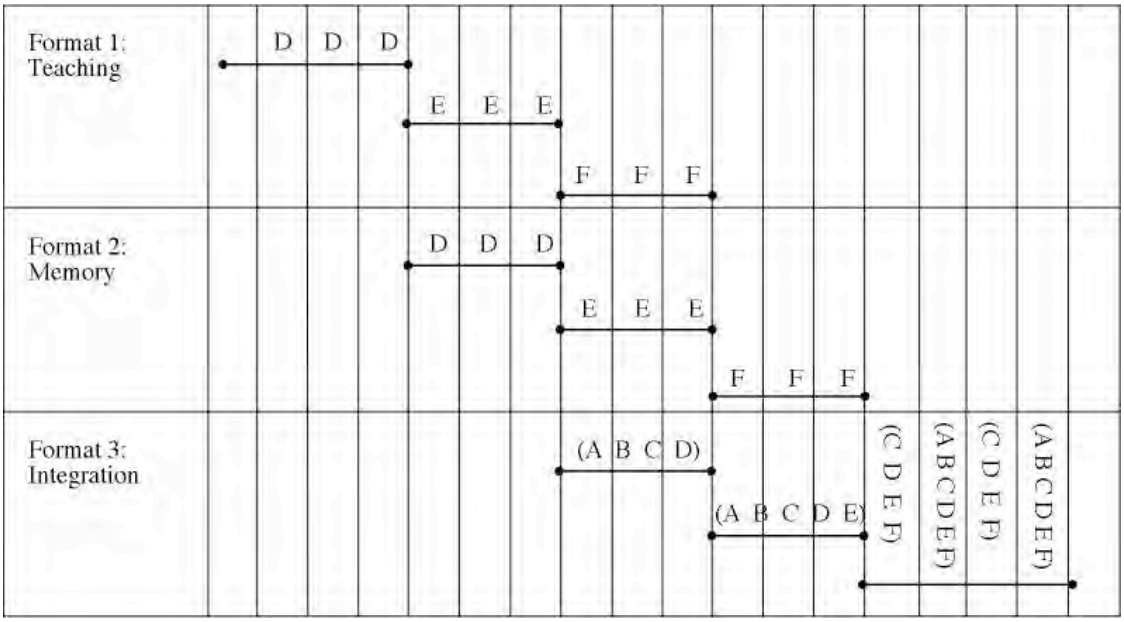
is “come here,” the initial teaching format assures that “come here” is taught when the task is presented in the simplest pattern of juxtaposition. This pattern is one in which the task is followed by another repetition of the same task. This pattern of juxtaposition permits the learner to do the same thing on subsequent trials. The learner can discover what signals the response (the command that you present) and what to do in response to your voice.

(Note that “stand up” is not juxtaposed with “stand-up,” except during a correction. Rather, the cycle of stand up-sit down is repeated.)

The second format is the *Memory Format*. This format increases the learner’s memory for the new command by permitting the learner to discriminate between the new command and familiar commands. The emphasis, however, is on memory for the new command. The learner’s memory is shaped by altering the juxtaposition of tasks, beginning with the easiest juxtaposition (repetition of the same task) and increasing the interference until the learner performs on the new task when it is juxtaposed to any of the other familiar tasks.

The third format is the *Integration Format* or the review format. This format does not prompt memory of a particular task. Rather, it tests the learner on all the tasks that have been recently taught. Below is a schedule for introducing commands through the various formats.

Table 6.1
Schedule for Presenting Basic Format Sequence



Units of mastery

Table 6.1 assumes that the learner has already been taught three tasks. These are referred to as A, B and C. They appear in the integration formats only. The figure shows how later tasks (D, E, and F) are processed.

Each vertical line indicates that the specified criterion has been met. The vertical lines do not refer to days or to the number of sessions that are required to achieve mastery. However, the teaching for each new item requires the learner to meet the specified criteria on three separate occasions three times before that item is presented in the next format.

Task D is presented first. It appears in Format 1 (Teaching) until the learner has met the criterion of performance three times. D then goes into the Memory format. Again, the task is repeated in the Memory format until the learner has met the specified criterion of performance three times. Finally, D goes into the Integration format. In this format, it is juxtaposed with tasks that have been taught earlier: A, B, C.

When D moves into the Memory format, a new task is introduced in the Teaching format (E) during the same session. This task is processed through the same cycle. After mastery is achieved for three appearances in the Teaching format, the task moves to the Memory format and from there to the Integration format.

The first format provides for establishing the response to the task. The Memory format increases the memory for the item being taught. The Integration format assures that the task is discriminated from all other tasks that have been taught. Note that not all tasks appear each time in the Integration format. Included are the most recently taught three or four tasks and one that hasn't been presented recently.

Note that the listing of formats for skills for review does not indicate the order you will present the skills during a session. The review would not present the tasks in a fixed order, but in an unpredictable order. The idea is to teach the learner to handle the task, not memorize an order of responses.

Note also that the figure does not show the passage of time. The actual progressions from format to format with one task may take considerably more time than with another. This difference in rate means that possibly the E task reaches the integration format at about the same time as the D task. Try to approximate the progression that is displayed.

Provide teaching for more than one task or command during a session. Make sure that what is being taught is adequately reviewed. The learner will not learn what it means to master new materials if the teaching process involves constant reteaching of the tasks.

Format 6.1
Teaching Stand-up, Sit-down

Ratio 1:1
Note: The teaching procedures used for stand up, sit down are used for the initial teaching of all basic commands. If necessary, use a shill.

Schedule: 3 times a day

Setup: Child on low stool or chair. Teacher faces child. Shill behind child.

Format:

1. [child's name], STAND UP.

To correct:

   a. Repeat:_____, STAND UP in a louder voice.
   b. Shill taps the child.
   c. Shill stands the child up if necessary.
   d. Teacher praises the child if the child stood up without prompting from the shill.
   e. Repeat step 1. After each trial return the child to a sitting position.

2. SIT DOWN.

To correct:

   a. Repeat, SIT DOWN in a louder voice.
   b. Shill taps the child.
   c. Shill sits the child down.
   d. Teacher praises the child if child initiated the response.
   e. Repeat steps 1 and 2.

3. Repeat steps 1 and 2 until firm. The child is firm when the child responds without prompting to four successions of "Stand up…Sit down."

Critical Behaviors

- Shill should be positioned behind the child, out of the child's sight.

- The shill should prevent the child from looking around as the teacher directs the child to respond.

- Shill should prod or move the child to prompt the appropriate response.

- Present the format until the child responds correctly on at least four consecutive trials.

This criterion of performance (learner performs correctly on at least four consecutive trials) must be met on three occasions before you can go to the Memory format for firming the command.

The corrections are straight forward—showing the learner how to respond, and then repeating the task.

Teaching Come Here

After stand up–sit down have been processed through the Teaching format, use the same format to teach, "Come here." Make sure, however, that "come here" is taught in a variety of places so that the learner understands that the command applies not simply to one room or to one part of the room.

Initially, stand about ten feet from the child with the shill directly behind the child. The child should be standing. The shill restrains the child if he tries to move from the place in which he is to stand.

Do not wait for the child to look at you. Say the child's name and "come here" in a clear but not over-emphatic voice: "James, come here."

If the child does not respond within two seconds, the shill taps the child on the back.

You repeat the command more emphatically: "James, come here." The shill again taps for several seconds and then walks the child to you.

Say, "Let's do it again." *The shill returns the child to the same place in which he stood before.* You say, "James, come here," in a mild voice.

The shill taps if the child does not respond within two seconds. If the child then starts to walk toward you, the shill immediately stops tapping. If the child stops after taking several steps, which is quite likely, then repeat the command more emphatically, as the shill again begins to tap the child. After two seconds of tapping, the shill walks the child toward you if the child hasn't made any attempt to walk toward you.

The procedure is repeated for perhaps five minutes or until the child initiates the response in four consecutive trials. Note: Do not stop after the child has responded correctly on only a single trial. Stopping after one trial will demonstrate to the child after he performs once, he is not required to perform again.

When the child performs, react with a smile. Tell the child what he has done well. "Good coming here." You may give the child a tangible reinforcer, such as a piece of sugared cereal.

Practicing "come here." After the child has performed consistently from the starting place for "come here," repeat the task in different places. At first, stand about ten feet from the child. Then begin to stand farther away. Take the child into different rooms of the facility and repeat the task. Also repeat it in the play area. Plan to repeat it until the child consistently performs in a variety of places.

Critical Behaviors

- Shill restrains the child if he tries to move before you issue the command.
- Shill first taps the child to respond after about two seconds from the time you say, "come here."
- Continue to practice this task until the child has responded correctly four consecutive times in each setting.
- Praise each of the child's correct responses.
- Change the starting place for "come here" after you have been working on the task a few trials.

After some trials, the learner will achieve the criterion of four consecutive correct responses; however, the learner will probably not perform on the task when you again present it later in the day. Teach the task to the specified criterion on three or four sessions. Then process the task through the memory paradigm.

Variations in New-Teaching Procedures

The approach for teaching commands should be modified for specific children.

1. If a child is exceedingly afraid of adults, do not begin with the tapping procedure suggested above. Instead, the shill is to gently help the child produce the response. Try this approach for sessions lasting five minutes. After a week, begin to introduce the tapping procedure on every third unsuccessful trial (if the child has not begun to respond without gentle prompting by the shill). Continue to react on every third trial for several weeks.

2. For the child who does not respond after two sessions in which the tapping is used, drop the tapping. Continue to present the tasks for five days without tapping. Then introduce the tapping again on every third unsuccessful trial.

3. For the child who seems to be attentive, do not use tapping initially, even if the child does not perform. Use physical assistance. Work for two sessions without tapping. Then begin to introduce it intermittently. (You can tell if the child is attentive by the extent to which he watches the presenting teacher and the shill. If the child turns to look at the shill when being positioned, he is fairly attentive).

Other Commands to Teach

Below is a list of possible commands to be taught. There are certainly other commands that might be introduced. One point to remember about commands: Try to use the same wording when using a particular command. The child may become quite confused if you vary the wording of the command greatly from time to time. (After the learner has mastered the task, you can begin to use variant wording, but be conservative.)

Pick up
Put down
Drop
Roll
Throw
Open
Close
Turn around
Push
Put
Hand me
Run
Walk
Move
Lift
Zip
Button
Wipe
Blow
Cover

The Memory Format

After the learner has met the criterion of performance three times for a basic command, introduce the Memory format. The Memory format is designed so you start with the easiest task from the standpoint of memory. That's a repetition of the same task the child successfully completed, with no pauses. This is level 1 difficulty. For level 2, you alternate between the task being taught and a familiar task. The pacing is rapid. For level 3 you interpolate several familiar tasks between presentations of the task being taught. For level 4 (the Integration format) you present the newly taught tasks at unpredictable times during other parts of the lesson or other parts of the day (at mealtime and during virtually all daily activities).

The goal of levels 1-3 is to make sure that the learner can respond to the new command when it is juxtaposed with other familiar commands. The criterion of performance for the Memory format is four consecutive correct responses on the new command when it is presented in level-3 context (with two to four interruption commands intervening between each instance of the new command). After this criterion has been met on three different occasions, the command is moved from the Memory format to the Integration format.

For example, when the learner becomes reliable on stand up and sit down, the instruction for "come here" uses stand up and sit down as interruptions. If the child also knows "Touch your nose," it would also be used as an interruption in level 3.

Here's the paradigm applied to "come here". Note that when the learner meets criterion for one level, the next level follows immediately, with no pauses.

Level 1: Repeat new command ("come here") until the learner achieves three consecutive correct responses.

Level 2: Alternate between "come here" and either "stand up" or "sit down." Begin with the child sitting. Plan to move to different places in the room as the sequence progresses.

Level 3: Interrupt each trial of "come here" with two or three familiar tasks ("stand up," "touch your nose," "sit down," and "come here"). Work on level 3 until the learner responds correctly to at least four consecutive presentations of the new command ("come here").

Integration Format

The integration format is a systematic review of the commands that have been taught. This review is part of each lesson starting when children have mastered four basic commands and continuing throughout the training, with the emphasis on the most recent tasks children have mastered.

Table 6.2, below, shows the pattern of processing commands first in the Memory format, then the Integration format. The three commands that have been taught are *stand up, sit down, come here,* in that order. *Stand up, sit down*, and *come here* are represented by the numbers 1, 2, 3. The next command is *clap*. It is labeled A. The subsequent commands that are taught are labeled B through I, in the order shown in the top row of the table.

Table 6.2
Tasks Processed Through Memory and Integration Formats

Memory Format	A (123)	B (123)	C (123)	D (AB)	E (ABC)	F (ABCD)	G (ABCD)	H (ABCD)	I (ABCD)
Integration Format		A123	AB12	ABC	ABCD	ABCDE	BCDEF	CDEFG	DEFGH

The symbols in parentheses indicate the tasks that are used for interference during presentation of the Memory format. Initially, three commands (*stand up, come here, sit down*) serve as interference. Beginning with the introduction of D, the two most recently taught commands become the interference. For E the three most recently taught tasks are used as interference. For F through I, the four most recently taught tasks serve as interference.

The vertical lines indicate that the learner has met the specified criteria of performance for the commands. The Integration format begins after the learner has processed A three times through the Memory format. When A appears in the Integration format, it is juxtaposed to the familiar commands 1, 2 and 3. (Note that these don't have to be the same commands that are used in the memory paradigm. The only requirement is that the commands are familiar and that the learner will probably perform correctly on them. The idea of the Integration format is to integrate one new thing into the context of familiar things.)

Format 6.2 shows an exercise in which *clap* is integrated with earlier-taught commands.

Format 6.2
Integration Format for Basic Commands

Ratio 1:1
No shill should be needed.
Schedule: 3 times a day
Set up: Child seated on stool or in chair. Teacher face-to-face with child.
Format:

1. _____, CLAP.
2. STAND UP.
3. SIT DOWN.
4. Stand up. Move at least ten feet from the child.

   _____, COME HERE.
5. Move back to your initial teaching position.

   _____, COME HERE.
6. Sit down.

   _____, SIT DOWN.
7. _____, CLAP.

   To correct:
   a. Repeat: _____, CLAP in a louder voice.
   b. Model: clap and say, "CLAP."
   c. Repeat: _____, CLAP in a loud voice.
   d. If child does clap, praise.
      If child does not clap, take the child's hands and clap them.
   e. Repeat step 7.
8. _____, STAND UP.
9. CLAP.
10. _____, CLAP.
11. _____, SIT DOWN.
12. _____, STAND UP.
13. _____, COME HERE.
14. _____, CLAP.

Repeat steps 8-14 in varying order until firm.

Note that the correction is provided only for *clap* (the most recently-taught command). The reason is that if the teacher corrects on any of the distracters, the timing changes greatly and a level 2 presentation becomes far more difficult than a level 2 presentation should be.

To correct the targeted command, lead the child, if necessary, and then test the child. (The correction is quite similar to the procedure for teaching the task.) The last step in the correction, however, is to return to the sequence and present several tasks that occurred immediately before the mistake.

Touch Commands

Touch X.
After the child has mastered four or more commands, introduce "touch X." Continue to work on other commands as the work on "touch X" proceeds.

1. Determine whether the learner can touch different body parts (items 1-6 of the Placement Test). Note any body parts that the learner can touch.

2. Evaluate the learner's performance in responding to a familiar object. Set out three objects the learner has responded to, for example, a ball, a handkerchief, and a penny. Present the task, "Touch the ball."

    a. Does the learner try to pick up the object?
    b. Can the learner discriminate between the object you name and other objects?

If the learner does not understand the command "touch," the learner will try to pick up an object for each task you produce. Here's the most basic format for teaching this child to touch things.

Format 6.3
Teaching Touching

Ratio 1:1.
No Shill is needed.
For the learner who does not respond to the command "Touch the ball," present the one-word task, "Touch." You point to the object that is to be touched and say, "Touch." The criterion is that the learner touches that object without pushing it, grabbing it, or trying to pick it up. Note that many low performing students fail this task. Those students need instruction in *touch*.

1. Place two or three objects in front of the child, two that are not easily picked up (a large book and a heavy ball, for example), and one that is easily picked up and is associated with being *picked up* (a spoon, or a piece of candy).

2. Model the response. Point to one of the larger objects. TOUCH. Touch the object.

3. Move the object. Point to it again. TOUCH. Touch the object.

4. Test the child. Point to one of the large objects. TOUCH.

To correct:
   a. Repeat TOUCH in a loud voice.
   b. If child doesn't respond, move the child's hand to the object.
   c. Repeat step 4.

5. Move the object. Point to it again. TOUCH.
6. Repeat step 5 until the learner has performed on three consecutive trials without prompting. Note keep moving the object to different locations after each trial.

7. Repeat steps 4, 5 and 6 with other large object.

8. Repeat steps 4, 5 and 6 with smaller object.

Do not present the same pattern of object-movement from one trial to the next. Some low performers will memorize the pattern.

To correct attempts to grab or pick up the smaller object:
   a. Hold your hand above the child's hand (not touching it) so that you can immediately restrain the child from trying to pick up the object.
   b. If the child tries to pick up the object, quickly push the hand down and remove the object from the learner's hand. Respond immediately and in a firm manner. Do not let the child pick up the object and hold it before you respond.
   c. Point to one of the larger objects. TOUCH.
   d. Point to the smaller object. TOUCH.
   e. Return to step 5.

Note that steps c and d in the correction prompt the appropriate response with the smaller object by juxtaposing the response to the larger object, then the smaller object, The child may require quite a few repetitions on these steps; however, they should correct the tendency to pick up the object and show the learner that the same word, TOUCH, signals the same response. Expect to repeat the correction with different objects that have been picked up. The skill of touching will not generalize to other objects that are customarily picked up. If the child has only modest difficulty with the touch response, proceed to tasks in which the objects are labeled: "Touch _____."

Repeat the procedure during each session. Use different objects, two large, and one small. Some learners have serious misconceptions about what "Touch" means. One of the more common misconceptions is that "touch" means to touch a particular place on the table. If you do not move the object after each trial, but simply present a large number of tasks with the object in a single position, you will find that when you finally move the object and say "touch," some learners will touch the spot where the object had been.

After the learner performs consistently on all objects, change the set so that it contains three smaller objects. Follow the same procedure of pointing to the object, saying "Touch" then moving the object and repeating the command.

Touching Objects that are Named

After the learner has responded successfully on three consecutive sessions, introduce tasks that name the object. Below is a list of the first five objects taught.

1. Touch your nose.
2. Touch the chair.
3. Touch the wall.
4. Touch the floor.
5. Touch the book.

Here's the teaching format for the initial teaching of these commands:

Format 6.4
Teaching Format for Touching Nose

Ratio 1:1
A shill is needed for this teaching,
Schedule: 3 times a day
Setup: Child seated on stool or chair. Teacher face-to-face with child. Shill seated next to child.

1. Present task to shill. TOUCH YOUR NOSE. Reinforce the shill with something that is reinforcing to the learner. Repeat the model several times. Make sure the learner is attending to the shill.
2. Present task to learner: _____, TOUCH YOUR NOSE in a loud voice.

To correct:

a. Repeat _____, TOUCH YOUR NOSE in a loud voice.
b. If the child does not respond, the shill guides the child's hand to the nose. The teacher does not reinforce if this prompting is needed. The teacher says: YES, TOUCH YOUR NOSE.
c. The shill returns the child's hand to his side.
d. Return to step 2.

Note: Do not model the response by presenting the task to yourself. The wording is different (Touch my nose).

Criterion. Repeat the task until the learner performs correctly on four consecutive trials. After the learner has achieved criterion, go to another activity. Return to this format later.

Memory Format. Follow the same procedure outlined for the other basic commands. When the learner has met the criterion of performance on three occasions, present the Memory format. Use familiar commands (stand up-sit down, clap, etc.) as the interruptions while firming the new command ("Touch your nose").

Format 6.5 is an example of the level 3 formats that might be presented after the learner meets the performance criteria for levels 1 and 2.
Below is an example.

Format 6.5
Level 3 Format for Touching Nose

Ratio: 1:1
Schedule: 3 times a day
Setup: Child seated on stool or chair. Teacher is face-to-face with child. Shill seated next to child.
Note: This sequence would immediately follow the learner's successful performance on level 2.

1. _____, TOUCH YOUR NOSE.

To correct:

   a. Repeat _____, TOUCH YOUR NOSE in a loud voice.
   b. If the child does not respond, shill guides the child's hand up to child's nose.
   c. Repeat step 1.

2. STAND UP.
3. _____, CLAP.
4. Stand. Move about ten feet from the child. Face the child.

   _____, COME HERE.

5. Return to the original teaching area.
6. _____, COME HERE.
7. _____, SIT DOWN.
8. _____, TOUCH YOUR NOSE.
9. Repeat step 1 through 8 until the child responds correctly to two consecutive appearances of each command.

Plan to teach about 10-15 "touch X" tasks. After the first five, some of the objects become more "difficult" for the learner because they are typically associated with "picking up," not "touching."

Below is a possible list that might be introduced after the first five objects:

6. Phone	8. Knee	10. Plate	12. Tooth
7. Head	9. Door	11. Pencil	

Once the learner has mastered these objects, introduce more difficult objects, such as edible items and containers. Expect the low performer to have difficulty with objects such as candy or other food. The learner will probably pick up these objects and put them in his mouth. The child may have trouble when you introduce objects such as *spoon, raisin*, etc. The child may pick up the object instead of touching it. Also, expect the child to have particular difficulty with objects that bear a "container" relationship to some other objects.

Foot and shoe bear a container-relationship to each other. So do pants and leg; cup and milk; bottle and pop; mitten and hand; hat and head; bowl and soup. Container-related objects such as *hat* should not be introduced until the learner has learned to touch at least 12 other objects and has achieved an accuracy percentage of at least 75 percent.

The learner may require hundreds of trials to perform at a 90 percent level of accuracy in touching the first four or five objects that are named. The best thing that you can do during this period is to provide the learner with the needed trials and present the trials so that the error pattern does not become permanent.

Restrain the child if he tries to respond before you have completed the command. Typically, the child will start to do something as soon as you say, "Touch…" You can reduce the probability of this mistake by speaking with relatively long pauses between the words. "Touch…the…pencil." If the child responds prematurely, grab his hand and say, "*Wait.*" Then repeat the task.

Try to end the work on touching with a successful trial. Then after a few minutes, return to the task. The child's performance on new tasks is often best on the first trial or two and then steadily deteriorates. Often the learner is not being willful when behaving in this manner; he is simply fatigued.

Form smaller groups of objects to work on chronic mistakes. Below is an outline for the procedure of forming groups and how to integrate them with the larger groups.

The child confuses A and B.

Group 1: A c d e

Group 2: B c d e

Group 3: A B c d e

Note that there are different types of confusion but all would be processed through the outlined strategy. Possibly, the learner always calls *fork* "cup" and always called *cup* "cup."

Possibly, the learner always calls *fork* "cup" and *cup* "fork."

Possibly, the learner calls *fork* "fork" and *cup* "fork."

Possibly, the learner randomly calls the object one of the names, or possibly the learner tends to use one of the names more than the other but there is no clear-cut pattern.

As the outline shows, the learner is permitted to work on one of the confused objects in a simplified setting. The object that should be selected for work in the first small group is the one most frequently misidentified. In the outline above, it is assumed that object A is the most frequently misidentified. The learner practices this task in the smaller group, where the response for task B is not a possibility. Do not present the examples in this group in a predictable order. Also, do not present A so frequently that the learner develops a strategy that response A is probably correct. Mix up the objects. Name them in an unpredictable order. Use the basic correction for the *teaching* format of commands.

After the learner is firm on the first small group, introduce the second small group. Do not work too long on this group. The most difficult response to establish is that for A. While the learner works on B, the response to A will weaken somewhat. If the learner works on B for a relatively long time, the next step in the outline will be quite difficult. (The reason we work on the most difficult task first is so we can get through group 2 more quickly.) Use the same procedure, same corrections, and the same criterion outlined in the teaching format.

After the learner has met criterion on the second group, introduce group 3. This group contains both the confused objects A and B.

Precorrect by modeling the correct responses for all objects before requiring the learner to perform:

My turn: Touch the fork…touch the cup…
Test: Touch the cup.
Touch the fork.

Do not present more than 20 trials at one time. Present them in an unpredictable order.

Naming Objects

After the learner has been taught ten objects in the teaching sequence, introduce *object naming*. Note that this activity is appropriate only for those children who have speech.

1. The work on identifying objects is not the appropriate time for speech teaching.

2. The criterion for accepting verbalization is this: If there is no doubt the learner's response referred to one of the objects and only one, the production is acceptable. If the production could possibly have referred to more than one, it is unacceptable.

3. Drop objects that consistently result in unacceptable productions. Work on the speech production at another time. When speech production is acceptable for the object, return the object to the set.

For instance, the learner says "tu" for *book*. The response is perfectly acceptable so long as the learner uses this response only for *book*. If the learner says "tu" for *shoe* also, we must work on the responses for *book* and *shoe* so that they are discriminable. We may work on the response *shoe* until the learner can say, "shuh." While we work on the response, we remove *shoe* from the set of objects that the learner is to identify. When the responses for the two objects are discriminable, we return shoe to the set. If the learner now responds to the shoe by saying "tu," we treat it as a mistake.

Procedure. There are three basic formats for object naming. These roughly parallel the three for basic commands. The first is the teaching format, which is highly prompted. The second is the Memory format, and the third is the Integration format.

Teaching Format. The teaching format provides very strong prompts for producing the response. The teacher first instructs the child to touch the object. "Touch the shoe." The teacher then asks, "What are you touching?" or "What is it?" (The second question is used in a variation of the format.)

What the format teaches the learner is that he can *name the action* that he carried out. The teacher directs this action. "What are you touching?"

Format 6.6
Teaching Format for Object Naming

Ratio: 1:1
Schedule: 3 times a day
Setup: Child seated on chair. Teacher on one side of the child, shill on the other side. Objects on table in front of child: book, pencil, cup.

1. The teacher presents task to shill: TOUCH THE CUP.
   (Shill touches the cup.)

2. Point to the cup. WHAT ARE YOU TOUCHING? "The cup."
   YES, THE CUP.

3. Teacher quickly presents task to child.
   TOUCH THE CUP. (Child touches the cup.)

4. Point to the cup. WHAT ARE YOU TOUCHING? "The cup."
   YES, THE CUP.

To correct:

a) Shill taps the child and says, "The cup…the cup."
b) When child responds, repeat steps 3 and 4.

5. Move child's hand so it is not touching the cup. TOUCH THE CUP. (Child touches the cup.) (Point to the cup.) WHAT ARE YOU TOUCHING?

The child must be touching the object when you present the question, "What are you touching?" If the child is not touching, the task teaches something that is not true, and the child will probably have difficulty with the *yes-no* format that comes later.

Remember to point to the object before asking the question: "What are you touching?" While the prompt is not particularly useful for the format above, it is very important for the next format.

Variation of the basic teaching format. After the child has been taught to identify four objects through the format above, introduce a variation of the format. This variation is identical to the format above except that instead of asking, "What are you touching?" you ask, "What is this?"

Format 6.7
Variation of Object-Naming Format

1. TOUCH A CUP. (Child touches cup.)

2. Point to the cup. WHAT IS THIS? "Cup."

To correct:
   a) Say the correct response.
   b) Repeat steps 1 and 2 to shill.
   c) Return to step 1.

3. TOUCH A BOOK. (Child touches book.)
   WHAT IS THIS?

4. TOUCH A PENCIL. (Child touches pencil.)
   WHAT IS THIS?
   Etc.

Use this format for introducing all new object identification.

Schedule for teaching objects. Below is a schedule for introducing new objects.

Table 6.3
Schedule for Teaching Objects

First Teaching Format "What are you touching?"	A B C	A B C	A B C	A B C D				
Second Teaching Format "What is this?"					A B C	A B C	B C D	C D E

This schedule shows only how the objects are grouped for the teaching formats. It does not show the other formats—the Memory format or the Integration format. Objects A through D are first taught in the Touching format. (Touch the ball. What are you touching?) Objects A through D are then taught in the second format. (What is this?) All subsequent objects are taught in the second format.

For the teaching of A, the set would consist of objects A, B, C. The task for B and C would simply require the learner to touch the object, not to name the object. So an initial teaching might involve first reviewing the touching for all, then working on naming A.

TOUCH A CUP. (Point) WHAT ARE YOU TOUCHING? "Cu."
YES, CUP.
AGAIN, WHAT ARE YOU TOUCHING? "Cu."
GOOD SAYING CUP. WHAT ARE YOU TOUCHING? "Cu."
TOUCH A SHOE. GOOD.
TOUCH A CUP. GOOD.
TOUCH A BOOK. GOOD.
TOUCH A CUP. WHAT ARE YOU TOUCHING? "Cu."
GOOD. WHAT ARE YOU TOUCHING? "Cu."
TOUCH A BOOK. GOOD.
TOUCH A CUP. GOOD.
WHAT ARE YOU TOUCHING?
Etc.

The same procedure would apply to the teaching of the next object, B. The task for objects other than B would be, "Touch the _____." It would involve no saying. For B, the tasks would be to touch the object and then answer the question, "What are you touching?" The same procedure would be followed for C, D, etc. The child would work on saying the object name for one of the objects. The saying would always be in the context of two tasks: TOUCH _____. WHAT ARE YOU TOUCHING?

The vertical lines signify that the learner has met the criterion of performance on two occasions. This means that the learner has responded correctly to all members of the group on at least two occasions. The group A, B, C is worked on until this criterion is met.

Memory Format. As object B is being taught, object A is processed in the Memory format. Familiar tasks that do not involve verbalization are used as distracters. See Table 6.4 below. The objects names are processed one at a time through the Memory format and Integration format.

The Memory format follows the same procedure as that specified for basic commands. The Memory format presents a more difficult task than the teaching format. The learner is not first told to touch the object. Instead, the learner is simply asked, "What is this?" This task is far more difficult than the teaching task, because the learner must remember the name. (For the pair of tasks in the Teaching format, the first question prompts the name of the object. TOUCH THE BOOK. The Memory format does not prompt the name, so it is more difficult.)

1. Begin with object A when the learner has mastered the criterion for teaching A.

2. Use familiar commands as interruptions. (In the illustration in Table 6.4, these are referred to as 1, 2 and 3.)

3. Process the object name through three levels of the paradigm (level 1 with no interruptions between presentations of the targeted task, level 2 with modest interruptions, and level 3 with substantial interruptions).

4. Repeat this procedure until the learner has performed acceptably on three consecutive occasions.

Table 6.4
Tasks Processed Through Memory and Integration Formats

Memory Format	A (123)	B (123)	C (123)	D (3A B)	E (ABC)	F (ABCD)	G (ABCD)	H (ABCD)	I (ABCD)
Integration Format		A123	AB12	ABC	ABCD	ABCDE	BCDEF	CDEFG	DEFGH

Illustration (Cell A). The distracters for A could be any commands the learner has mastered, including touch commands (touch your nose, touch the ball, etc.) The task for A is simply, "What is this?"

Level 1: The teacher points to cup. "What is this?"
"…Yes, cup. What is this?…Yes, cup. What is this?"
The teacher continues until the learner responds correctly to three consecutive questions.
Level 2: The teacher presents four familiar objects (cup, ball, book, pencil).
Teacher points to cup, "What is this?"
"Stand up…"
Teacher points to cup, "What is this?…Yes, a cup."
"Sit down."
Teacher points to cup, "What is this?…Yes, a cup."
"Touch your nose."
Teacher points to cup, "What is this?…Yes, a cup."
"Touch the book."
Teacher points to cup, "What is this?…Yes, a cup."
Etc.

Level 3: For level 3 the interruptions between presentations of the task for A become more elaborate:
Teacher points to cup, "What is this?…Yes, a cup."
"Touch your nose."
"Stand up."
"Clap."
Teacher points to cup, "What is this?…Yes, a cup."
"Sit down."
"Touch the pencil."
Teacher points to cup, "What is this?…Yes, a cup."
Etc.

Illustration (Cell B). As B is being processed through the Memory format, A is processed through the Integration format.

Integration format. The Integration format is similar to the Integration format used for basic commands. Below is an illustration of the format that could be presented after the learner has processed five object names through the Memory format.

Format 6.8
Integration Format

Ratio: 1:1

Setup: Teacher sits in front of child. No shill is needed.
Teacher presents ball, cup and pencil.

1. Point to cup. "What is this?"

2. Point to pencil. "What is this?"

3. Point to ball. "What is this?"

4. Points to nose. "What is this?"

5. Point to ball. "What is this?"

6. Point to cup. "What is this?"

7. Points to nose. "What is this?"

8. Point to pencil. "What is this?"

Etc.

To correct mistakes that occur infrequently, model the answer, test, and return to the step in the Integration format that was missed. If the mistake is chronic, use an abbreviated Memory format for the item. Then return to the step in the Integration format that was missed.

The use of the Memory format as a correction assures that the learner will practice the missed object name in a context that is relatively easy before returning to the context of the Integration format.

As Table 6.4 shows, the distracters for the Memory format change as new items are mastered in the Teaching format. When D is processed, the distracters are 3, A and B. Let's say the new object is a book. The learner is firm on A and B (cup and pencil).

Level 1: Teacher points to book. "Book. What is this?"

Level 2: Teacher points to cup (a familiar object). "What is this?"
Teacher points to book. "What is this?"
Teacher points to pencil. "What is this?"
Teacher points to book. "What is this?"
Teacher continues until learner has responded correctly to three successive presentations of *book*.

Level 3: Teacher Points to book. "What is this?"
Teacher Points to cup. "What is this?"
Teacher Points to pencil. "What is this?"
Teacher points to book. "What is this?"
"Touch the shoe. What are you touching?"
Teacher points to pencil. "What is this?"
Teacher points to book. "What is this?"
Teacher continues, using two or three objects as interruptions between presentation of *book*. The teacher uses different patterns of interruption on different trials. Note that the task for the shoe is prompted by directing the learner to first touch the shoe, and then identify it.

Summary: The same basic steps are used for everything that is taught. Each task will have to be repeated many times before the learner achieves mastery. The context for the response systematically changes. Each change makes the target task more difficult. It is far more difficult for the learner to respond to the task "WHAT IS THIS?" when it appears in the Integration format than when it appears in the initial Teaching format.

The three formats used to firm the learner are 1) the initial Teaching format 2) the Memory format, and 3) the Integration format. Through a series of small-step changes in what is presented, the learner will be able to master content that would not be mastered without a careful presentation of tasks and careful presentations of grouping these tasks and systematically changing tasks. The central message is that all details of the presentation must be designed so the order of tasks varies (so that the learner will not learn a sequence but learn a discrimination) and the amount of practice is geared to mastery.

SECTION III

Chapter 7
Teaching *Yes-No*

Overview

After the child has become proficient answering, "What is this?" for 8 objects, begin work on *yes-no*. There are five formats in the program. Each is briefly described below. Following the description is a more detailed outline of the procedures for teaching and practicing each format.

1. The teacher builds an association between touching a specified object and the answer to a *yes-no* question. The teacher says, "Touch the shoe." The child touches the shoe. The teacher holds the child's hand on the shoe, points to the shoe, and asks, "Are you touching a shoe?" The child answers, "Yes." (The rule that he learns is: touch the specified object, then answer the questions "yes" about that object.)

2. The teacher introduces "no." This format is introduced after the child has become reasonably facile at performing the pair of tasks presented in Format 1. After the child has touched a particular object, the teacher asks the *yes-no* question about that object. The child continues to touch the object as in step 1. The teacher asks, "Is this a _____?" The answer is "yes." The teacher then points to another object and asks the same question. The answer to these questions is "no." For example, the teacher says, "Touch the shoe." As the child touches the shoe, the teacher points to the shoe and says, "Is this a shoe?" "Yes." The teacher then points to another object and asks, "Is this a shoe?" "No." The *yes* object is the one that the child continues to touch. The *no* objects are all other objects in the presentation group.

3. The teacher presents a variation of step 2. She instructs the child to touch an object. As the child touches the object, she asks a different pattern of *yes-no* questions. The "yes" response is appropriate only when she names the object that the child is touching. For example, the teacher says, "Touch the shoe." As the child touches the shoe, the teacher says, "Is this a shoe?…Is this a shoe?…Is this a man?…Is this a tiger?…Is this a shoe?…Is this a cup?…Is this a ball?...Is this a shoe?"

4. The teacher shows the child that his use of the words *yes* and *no* are not arbitrary but actually control the teacher's behavior. She presents a book or a large ball. "Do you want to eat this?" The shill prompts the child to say "No. No." If the child does not respond, the object is placed near his mouth. If he says, "yes," the object is placed near his mouth. If he says, "no," the object is not placed near his mouth and the child is reinforced for the response. The teacher repeats the task, presenting a piece of candy (or some reinforcer the child would eat). "Do you want to eat this?"

5. This is the most advanced step in the *yes-no* sequence. The teacher presents different *yes-no* questions for different objects. The teacher points to an object and asks, "Is this a shoe?" The answer can be either yes or no. The teacher points to another object. "Is this a cup?" The answer can be either yes or no. Note that the child is not touching objects. The teacher simply points to an object and then asks the question: "Is this a _____?"

Format 1. The child is taught to respond to a pair of commands, first touching an object, and then answering the question that asks if the child is touching that object.

Use only objects the child can successfully touch. "Henry, touch the cup." As soon as the child touches the object, place your hand on the child's hand, holding the child's hand on the object. "Henry, are you touching a shoe?"

If the child says, "Yes," and also says other words, he is not to be rewarded. For example, if he says, "Shoe, yes," his response is unacceptable. If the child gives a response that the teacher can unambiguously interpret as "yes," the response is appropriate even if the child says something like "us." The test the teacher uses is, "Do I know that he tried to say yes?" If so, the teacher is to treat the response as an acceptable response. Note that the idea is not to teach the child articulation at this point, merely to show him how to *use* the word "yes."

Sometimes the child will begin to respond prematurely after he has worked on the yes-association with three of four objects. Perhaps the child will say "yes" when the teacher says, "Henry, touch the ball." This response is inappropriate. Slow the command to counteract this mistake: "Listen: Touch…the ball." This wording reduces the possibility that he'll say anything.

Work on Format 1 of *yes-no* until the child can perform successfully on all of the objects that he can successfully touch.

Format 7.1
Yes-No Format 1

Ratio: 1:1

Schedule: 3 times a day

Setup: Child is seated on stool or chair in front of table. Teacher is face-to-face with child. Shill is seated or standing immediately behind child. The following familiar objects are presented: book, pencil, cup, shirt, and block.

1. Present task to shill: TOUCH THE CUP.
   Hold shill's hand on cup.

2. Point to the cup and ask: ARE YOU TOUCHING THE CUP?
   Shill responds, "yes." GOOD.

3. Present task to child. TOUCH THE CUP.
   Hold child's hand on cup.

4. Point to the cup and ask: ARE YOU TOUCHING THE CUP?

   To correct if the child does not say, "yes" within 3 seconds:
   a. Shill responds, YES.
   b. Teacher repeats the question: ARE YOU TOUCHING THE CUP?
   c. Shill taps the child and says, YES.
   d. Teacher repeats the question, ARE YOU TOUCHING THE CUP?
   e. Shill taps the child and says, YES.
   f. Repeat step d until the child responds correctly.

5. TOUCH THE BOOK. Hold the child's hand on the book.

6. Point to the book and ask: ARE YOU TOUCHING A BOOK?

7. TOUCH THE PENCIL. Hold the child's hand on the pencil.

8. Point to the pencil and ask: ARE YOU TOUCHING A PENCIL?

Critical Behaviors for Format 1:

- Use only those objects that the child can successfully touch.
- Shill prompts with the correct response if the child does not respond in one second.
- Child is rewarded only for saying "yes."
- Quickly ask, IS THIS A CUP? after saying, TOUCH THE CUP.

Format 1A. The child is firm on Format 1 when the child can correctly respond to at least 10 consecutive trials involving different objects without receiving prompting from the shill.

Follow Format 1 with Format 1A. The difference between the formats is the question that is asked. Format 1 presents the question: "Are you touching the _____?" Format 1A presents the question: "Is this a _____?"

Format 7.1A
Yes-No Format 1A

Ratio: 1:1

Setup: Same as that for Format 1. Use 8-10 familiar objects. Shill is behind the child.

1. TOUCH A CUP. Hold child's hand on cup.

2. Point to the cup and ask, IS THIS A CUP?
   Shill answers. The question is repeated for the child.

To correct:

   a. ARE YOU TOUCHING A CUP? YES. IS THIS A CUP?
      Shill prompts if necessary.
   b. Remove child's hand and repeat steps 1 and 2.

3. Repeat steps 1 and 2 with all objects.

4. Repeat format until the child can successfully respond to 10 consecutive objects without receiving prompting.

The learner shouldn't have much trouble with this format. The problems will come with the next format, when the learner is required to respond to one object with *yes* and to another with *no*.

Format 2. The procedure is similar to that used for Format 1. Present at least four familiar objects (that is, objects on which the child is consistent at touching and at answering the *yes* question).

Before presenting the format, instruct the child to touch each of the objects. "Henry, touch the shoe…touch the glove…touch the dog…touch the pencil." Possibly, also ask *what* questions: TOUCH THE PENCIL. WHAT IS THIS?

Format 2 begins with instructions to touch (TOUCH THE CUP). As soon as the child touches the cup, place your hand on his, holding his hand on the cup. With your free hand, point to the cup. Ask: IS THIS A CUP?

Quickly point to one of the other objects and say: IS THIS A CUP? The shill answers instantly, "no."

After the second prompt from the shill, repeat the question IS THIS A CUP? If the child does not respond, the shill taps the child, and prompts "no." Continue to repeat the question with the shill giving verbal responses and tapping the child until the child responds. If the child responds after the shill prompts, reward him.

Repeat the procedure with other objects in the set.

Expect the child to have some initial difficulty with the "no" examples. The longer he has spent on Format 1, the more difficulty he will have with the "no" response. He will have learned that the appropriate response is "yes." For this reason, the shill should not become aversive when prompting.

Expect different children to require substantially different amounts of time to reach criterion on the first set. However, once a child is firm, introduce new objects. Introduce any of the objects that are firm as the pointing objective.

Format 7.2
Yes-No Format 2

Ratio: 1:1
Schedule: 3 times a day

Setup: Child is seated on a stool or chair at a table. Teacher is across the table, face-to-face with the child. Shill is seated or standing immediately behind the child. The objects for this set are familiar to the learner: book, pencil, cup, shirt, block, etc.

1. TOUCH THE CUP. After the child touches the cup hold the child's hand on the cup.

2. Point to the cup and ask: IS THIS A CUP? ("Yes") GOOD.

3. Pause several seconds. Again point to the cup and ask: IS THIS A CUP?
   ("Yes") GOOD.

4. Point to the book and ask: IS THIS A CUP?
   Shill responds, "No."

5. Teacher repeats the question: IS THIS A CUP?
   Shill taps the child and says, "No."

6. Repeat step 5 until the child responds correctly.

7. Rearrange the objects. TOUCH THE BOOK.
   Hold the child's hand on the book.

8. Point to the book and ask: IS THIS A BOOK? ("Yes") GOOD.

9. Again point to the book and ask: IS THIS A BOOK? ("Yes") GOOD.

10. Point to the shirt and ask: IS THIS A BOOK? ("No")
    To correct child for not responding or saying, "Yes," repeat prompting procedures in step 5 until the child responds correctly.

Critical Behaviors for Format 2

- Rearrange the objects after the child has successfully responded to *yes* and *no*.
- Present the five objects in an unpredictable pattern.
- Reinforce the child after tasks by saying, "Good." Do not say, "Yes."

Format 3. The purpose of this format is to generalize the *no* response. It prompts the learner to recognize that the object touched is the "yes" object; all others are "no" objects.

For this format you will need five objects.

Format 7.3
Yes-No Format 3

Ratio: 1:1

Schedule: 2 times a day

Setup: Five small objects. Shill and child sit side by side at a table. Teacher sits across the table, facing them.

1. TOUCH A SPOON. As soon as the child touches the spoon, hold hand on spoon.

2. Point to spoon: IS THIS A SPOON?

3. Point to each object that is not a spoon, starting with the object to the far left. Ask: IS THIS A SPOON?

   To correct:

   a. Shill says, "No."
   b. Point to object: IS THIS A SPOON?
   c. Repeat until child responds.
   d. Return to the farthest left object and ask: IS THIS A SPOON?

4. After child has responded correctly to all objects, rearrange objects and repeat steps 1-3.

5. Repeat sequence with a second object: IS THIS A BALL?

For this format to succeed you must point very clearly to each object, and the child must attend to your point. The child will not get the idea that the objects not touched are "no" objects unless the child sees which objects you point to.

The child may have some trouble responding "yes" to the second object (ball) when you attempt to repeat the cycle with ball as the "yes" object. If so, return to Format 2 and firm the learner on at least three objects in the group. Then return to Format 3. Consider the child firm on Format 3 when he responds correctly to three groups of objects.

Format 4. This format should not be attempted if the learner is shaky on the preceding formats. The learner may have trouble accepting the idea that the word "no" is a legitimate response and may be reluctant to respond. If so, work on formats 2 and 3 until the learner is comfortable with the "no" response.

There are several variations for Format 4. For the first, you use the learner's ability to answer *what* questions: WHAT IS THIS?

Format 7.4
Yes-No Format 4

Ratio: 1:1
Schedule: 2 times a day
Setup: Five objects. Teacher sits across table from child. Shill sits next to child.

1. Touch each object and ask: WHAT IS THIS?

2. TOUCH A CUP. WHAT IS THIS? "A cup."

3. YES, A CUP. IS THIS A *BALL*? "No."

   To correct:
   a. Shill responds, "No."
   b. IT'S A CUP. IS THIS A BALL? Shill responds if necessary.
   c. Repeat steps 2 and 3 until the child responds correctly.

4. TOUCH A CUP.
   After child touches cup hold child's hand on cup. WHAT IS THIS?

5. YES, A CUP. IS THIS A CUP? "Yes."

   To correct:
   a. Shill responds, "Yes."
   b. Repeat step 5. IT'S A CUP. IS THIS A CUP?
   c. Repeat steps 4 and 5 until the child responds correctly.

6. Repeat steps 1-5 until the child responds to the sequence without a mistake.

7. Repeat steps 1-5 for a second object, except present the question that is answered "yes" first (steps 4, 5, 2 and 3).

Repeat the format until the child responds correctly to at least 3 different objects. If the child exhibits a persistent mistake pattern, present the steps to the shill and reinforce the shill for responding correctly.

Format 4 shows the learner the relationship between the answer to the question WHAT IS THIS?, pointing to an object, and answering a *yes-no* question about that object.

Format 4A provides the same type of information, but in a less systematic way. The schedule and setup for this format are the same as those in Format 4.

Arrange objects so the last object is not a cup.

Format 7.4A
Yes-No Format 4A

1. Touch each object and ask: WHAT IS THIS?

2. Hold child's hand on last object touched. Point to the object. IS THIS A CUP?

   To correct:

   a. TOUCH A CUP. YES, THAT'S A CUP.
   b. TOUCH (the last object in the row).
   c. (Point to object.) IS THIS A CUP? NO.
   d. Remove child's hand. Repeat steps 1 and 2.

3. IS THIS A BOOK?

4. IS THIS A PENCIL?

5. Touch another object in the row and repeat the same three questions. Repeat until child responds correctly to touching the object, answering a series of three or more *yes-no* questions that do not name the object the child is touching. The answers to all these questions is *no*. Repeat this format with all common objects that have been taught.

Note: The correction involves telling the learner to touch the object named in the task. If the child responds correctly to the task, IS THIS A PENCIL?, the first step in the correction is TOUCH A PENCIL. You identify the object: YES, THAT'S A PENCIL. You then have the child touch the object that was mistaken. TOUCH A SPOON. And you ask: IS THIS A PENCIL?

Format 4B. The schedule and setup for this format are the same as for Format 4.

Format 7.4B
Yes-No Format 4B

1. Touch each object and ask: WHAT IS THIS?

2. Point to each object and ask three questions, one of which is answered "yes" and the other two, "no." Do not use the same order of *yes-no* responses for all the objects. Present questions in an unpredictable order.

   To correct: Follow the same procedure used in Format 4A.

3. Repeat format with all objects that have been taught.

The difference between this format and Format 4A is that this format involves different questions for different objects, whereas Format 4A presents the same three questions for each object.

The Memory Format for Chronic Mistakes. Use the Memory format if the child starts to develop serious mistake patterns. Mistake patterns are particularly dangerous with *yes-no* responses because there are only two possible responses for any question. The learner may therefore develop a strategy of saying both possibilities: IS THIS A BALL? "Yes…no…no." Try to eliminate responses of this type before they become chronic. If they seem to persist (for more than 100 trials), it may be a good idea to drop the teaching of *yes-no* with objects and concentrate on teaching object names. After the learner has mastered 10 or more names, return to the *yes-no* teaching. It may go much easier.

Since chronic mistakes are very dangerous with *yes-no* teaching, make sure you follow the formats precisely, including the wording you use to reinforce correct responses. Format 4A, for example, requires you to say: YES, THAT'S A PENCIL, after the child touches the pencil as part of the correction. This wording is important. It established the "yes" response quickly without presenting a *yes-no* task to the learner. This means that you can move to the next step quickly.

If you discover that the learner is beginning to guess, slow the presentation *between objects*. Try to run quickly the tasks that involve a particular object. Once the learner has finished working with one object, however, reinforce and pause for a few seconds before presenting the next steps in the format.

If the change in pacing and careful execution of the tasks does not eliminate the mistakes, use the memory paradigm for establishing the correct response to a task. For example, if the child responds "yes" when you point to the cup and ask: IS THIS A NOSE, use the paradigm. (The learner may actually have trouble with this task because the word *nose* sounds something like *no*, creating some interference. Or the learner may be confused for some other reason that we can't ascertain.) The Memory format is used as soon as the shill tells the correct answer.

Level 1: Point to cup. IS THIS A NOSE?.. IS THIS A NOSE?..…..…. IS THIS A NOSE? …….……. IS THIS A NOSE? (The dotted lines indicate that you are pausing for longer periods of time if the learner responds correctly.) Continue until the learner has responded correctly to three consecutive tasks.

Level 2: Point. IS THIS A NOSE? ... CLAP… IS THIS A NOSE?…TOUCH YOUR HEAD … IS THIS A NOSE? … STAND UP … IS THIS A NOSE? … Continue until the learner has responded correctly to three consecutive presentations of: IS THIS A NOSE? Make sure you are pointing to the object, and the learner is looking at that object, before you present questions about that object.

Level 3: Point. IS THIS A NOSE? … STAND UP … TURN AROUND … SIT DOWN … IS THIS A NOSE? … TOUCH YOUR HEAD … STAND UP … CLAP … IS THIS A NOSE? Continue until the learner has responded correctly to three consecutive presentations of: IS THIS A NOSE?

Note: The interference tasks introduced in levels 2 and 3 do not involve questions and do not involve the object that is being firmed. (The teacher does not say: TOUCH YOUR NOSE.) These interference tasks should be as dissimilar as possible from the question: IS THIS A NOSE?

When the learner has completed the sequence, take a little time out then return to the original format. It is a good idea to present the format to the shill before the child attempts it. This type of pre-correction sometimes buttresses against errors.

The Memory format can be used for firming any task in any of the formats. Use it if necessary. It becomes necessary if the specified corrections do not work, or if they apparently work for the moment, but the learner makes the same mistake when the task is repeated. (You find yourself in a correction cycle. You correct the error. Then you return to the format, only to discover that the learner makes the same mistake. You correct it, return and again the mistake occurs.)

Format 5. The *yes-no* tasks presented in the first four formats require the learner to *confirm* whether something has a particular label: ARE YOU TOUCHING A BALL? … IS THIS A CUP? *Yes-no* has another completely different function, which is quite important. This function is *manding*. The learner responds in a way that tells you what to do. You ask: DO YOU WANT SOME CAKE? If the learner says "yes," you do one thing. If the learner says "no," you do another. Note that the learner's use of *yes-no* serves as a direction to your behavior.

The manding *yes-no* is taught after the learner has mastered Format 4 or is working on Format 4. There are three variations of Format 5. The first establishes the yes-response. The next establishes the no-response, and the third links the *yes-no* response with the answer to a yes-question.

Format 7.5
Manding *Yes-No* Format 5

Ratio: 1:1
Schedule: 3 times a day
Setup: Child is seated on stool or chair in front of a table. Teacher is face-to-face with the child. Shill is seated next to the child. The objects on the table are edibles the child finds reinforcing — candy, cookies, crackers and fruit — or other objects that are reinforcing to the child. All objects must be reinforcing to the child because we expect the child to say, "yes" in response to the question: "Do you want to eat this?"

1. Hold a piece of candy about 6 inches from shill's face.
   DO YOU WANT TO EAT THIS? "Yes." Smile.

2. Quickly pass the candy close to the child's mouth, and give it to the shill.
   EAT IT UP. Shill eats the candy with enjoyment.

3. Repeat steps 1 and 2 with one more goodie.

4. Hold a piece of candy about six inches from the child's face.
   DO YOU WANT TO EAT THIS? "Yes."

   To correct if the child does not say "yes":
   a. Shill says, "Yes."
   b. Repeat step 4 until the child responds without prompting.

5. Hold a piece of cookie about 6 inches in front of the child's face.
   DO YOU WANT TO EAT THIS? "Yes."

6. Hold a piece of cracker about 6 inches in front of the child's face.
   DO YOU WANT TO EAT THIS? "Yes."

7. Repeat with other goodies until child responds correctly on five consecutive trials.

The pacing of this sequence must be very fast. When you reinforce the shill, pass the reinforcer right in front of the child. Make it look very attractive to him, and make the point that the shill is getting it for some reason. After the shill has received three goodies, quickly present the same task to the child. Don't pause. We want to establish the idea that if you say "yes," you get it. If you say nothing, you don't get it.

If the learner initiates correct responses only on a correction, change the correction procedure. If the learner requires three corrections, stop reinforcing imitation responses. Present the task to the shill, and reinforce the shill. Then present it to the child. If the child responds correctly to the question you present, reinforce. If the child requires a correction, do not reinforce. Reinforce only if the child responds to the question: DO YOU WANT TO EAT THIS? Do not reinforce if the child responds to the shill's saying, "Yes."

Format 5A: This format is introduced after the child has met an acceptable criterion of performance on Format 5. This format requires the learner to say "no." The format presents aversive consequences; therefore, the format should be introduced intermittently and should involve only a few trials at a time.

Format 7.5A
Yes-No Format 5A

Ratio: 1:1

Schedule: 3 times a day

Setup: Child is seated on stool or chair. Teacher is face-to-face with child.
Shill is seated next to the child.

1. Hold your hand over the shill's leg. Ask: DO YOU WANT ME TO SLAP YOU? "No." Smile and remove hand.

2. Repeat step 1.

3. Hold your hand over the child's leg. DO YOU WANT ME TO SLAP YOU?
   Shill immediately taps child while saying, "No, no."
   Slap the child's leg if child doesn't respond within 3 seconds.

4. Repeat steps 1-3 in sequence two times. Then go to another activity.

Critical behaviors for Format 5A

- Teach this format briefly, several times each day.
- The shill should respond emphatically when asked: DO YOU WANT ME TO SLAP YOU? The answer should be without hesitation, "No."
- If the child does not respond, slap the child hard enough so that the slap is mildly aversive, but no harder.

Use this format no more than three times in succession as long as the child is receiving slaps.

If the child responds only after the shill's prompt ("No, no"), drop the prompt after two such corrections. If the child does not respond without prompting, the child receives a slap.

This format should not be presented unless the teacher has information that the slap is aversive *to the child*. There should be no question about whether the child "wants to be slapped." If the slaps are not aversive, the child may not care whether he is slapped. IF THE CHILD ENGAGES IN SELF-SLAPPING OR HEAD BANGING, DO NOT USE THIS FORMAT.

If it is not possible within your system to provide aversive consequences, you will have to omit this training or try to achieve it through less efficient demonstrations (such as those provided by Format 4B).

Format 5B. This format can begin before the learner has performed adequately on 5A or it can be presented after 5A. Format 5B introduces the question, "Do you want to eat this?" with objects the learner probably does not want to eat.

Format 7.5B
Yes-No Format 5B

Ratio: 1:1

Schedule: 3 times a day

Setup: Child is seated on stool or chair. Teacher face-to-face with child. Have ready the following objects: candy, cookie, cotton ball, and chalkboard eraser.
Shill is seated next to the child.

1. Hold up a small piece of candy. DO YOU WANT TO EAT THIS? "Yes."
   Give the candy to the child. EAT IT UP.

2. Hold up the cotton ball in front of the shill. DO YOU WANT TO EAT THIS? "No."

3. Immediately hold up the cotton ball in front of child. DO YOU WANT TO EAT THIS?
   Shill taps the child and says, "No."

4. If the child says "Yes," give the child the cotton ball. EAT IT UP.
   Shill prompts, "No," and prevents the child from putting the cotton ball in his mouth.

5. If the child does not say "no" within 3 seconds, repeat step 4.

6. Hold up portion of a cookie in front of the child. DO YOU WANT TO EAT THIS? "Yes."
   Give the cookie to the child. EAT IT UP.

7. Hold up the chalkboard eraser. DO YOU WANT TO EAT THIS? "No."
   Put the eraser down. GOOD JOB.

8. Hold up the cotton ball. DO YOU WANT TO EAT THIS? "No."

9. Hold up a piece of candy. DO YOU WANT TO EAT THIS? "Yes."

Cautions:

Try to keep the pacing fast. If the pacing becomes too slow, it will be harder for the learner to learn the relationship.

Do not use this format if the child would actually eat the cotton ball.

Do not present more than a few trials before going on to another activity.

If the child responds correctly only when the shill prompts, drop the shill prompt after two corrections. If the child does not respond correctly on the no-responses, place the object near the child's mouth.

If the child says, "No," when you present a cookie or candy and ask: DO YOU WANT TO EAT THIS?, do not give the cookie or candy to the child. Hold it in front of the shill and repeat the question: DO YOU WANT TO EAT THIS? The shill says, "Yes," and you give the edible to the shill. Repeat the task with the shill, using another edible. DO YOU WANT TO EAT THIS? Give the edible to the shill. Then quickly return to the child. Present an edible and say, DO YOU WANT TO EAT THIS?

Use of the Memory Format. If the child develops a pattern of producing the same mistake, use the Memory Format. Do not present aversive consequences when using this format. Simply work on the response. To correct, the shill says the correct answer, and you return to level 1 difficulty.

Generalizing *Yes-No* Responses

The use of *yes-no* is quite unfamiliar to the learner. Therefore, the learner will not automatically generalize to all situations. If the learner is to use *yes-no* in other situations, the use *must be modeled and tested*. Simply because the learner responds to *yes-no* with object-identification tasks and tasks involving "Do you want _____?" doesn't mean the learner will generalize to prepositions, for example. However, the teaching of *yes-no* with prepositions is quite easy and should be a part of the initial teaching. "Where is the ball? … Yes, under the table. Is the ball under the table? ... Is the ball on the table? … Good."

The five *yes-no* format groups simply set up the initial teaching. They do not provide all the detail that may be required for all situations.

Once the learner has learned the manding *yes-no*, for instance, you can integrate this *yes-no* with the *what* questions. You can ask this question pair: "Do you want to eat this candy?" … "What do you want to eat?" ("This candy.") The same *what* questions that apply to the other *yes-no* tasks apply to manding tasks.

Do not use the *what* question following a response to the *yes-no* question, however, because the task becomes problematic. "Do you want to eat this cotton ball?" … "What don't you want to eat?" The second question is so similar to the one used for *yes* responses that the learner may not attend to the difference and may become confused.

Throughout the sequence, remember that timing and corrections are going to spell the difference between success and failure. Success may not come quickly; however, if your correction procedures and timing are appropriate, they will come without inducing chronic mistakes. If the learner shows signs of developing chronic mistake patterns, assume that the learner's memory for the detail is relatively poor and use the Memory format. Don't hesitate to use the shill as a model of how to respond. Pre-correcting or buttressing against a mistake is far more effective than trying to correct it after it occurs. However, it doesn't follow that we should try to pre-correct every mistake. A few mistakes present no problem. They provide the learner with information. Chronic recurrence of the same mistake, however, should be prevented if possible.

Section III

Chapter 8

Teaching the Card Reinforcer

After the child has learned some basic commands, has become reasonably compliant in the instructional situation, and has learned to work for the tangibles and other reinforcement provided by the teacher, the Card Reinforcer should be introduced. The Card Reinforcer is a laminated card (3x5) that is attached to a string and worn around the child's neck during all activities of the day. To award a "point" or a "token" to the child, the teacher simply makes a mark on the card. When the child has received a certain number of points or marks, the marks are exchanged for tangibles or other reinforcers.

Use of the Card Reinforcer has many advantages over more elaborate token reinforcement systems.

1. It eliminates the need for tokens, coins, or other small objects that are easily lost, or are managed only with substantial adult attention. (Where does the child keep the tokens? How do you prevent the child from playing with the tokens? How do you prevent the child from stealing tokens from you or from other children?)

2. It makes it possible to award points while the child is engaged in a variety of activities, even physical games.

3. Since the card is associated with points or tokens, the card itself will become a powerful reinforcer in time.

4. When the card becomes a powerful reinforcer, removal of the card will be punishing to the child; therefore, the card permits the teacher to provide effective punishment that involves no physical manipulation.

You will probably have to make your own Card Reinforcers. Each card should be approximately 3 inches by 5 inches. The cards should be laminated so that marks that are made on them can be easily erased. Each card should have a hole in one end so that a cord can be threaded through the hole. The cord should be long enough to slip easily over the child's head, but short enough so that the card hangs above the child's waist.

Ham it up when you first introduce the card. Your actions will demonstrate to the child that you value the card and that the stars you will make on the card are also things of value. Don't assume that the child understands what you are saying; assume that the child will understand only what you are doing.

Initially, you may have to prod the child when you say, "Exchange," the command used for exchanging marks for reinforcers. (See Card Reinforcer Format 1.) Again, your behavior will demonstrate to the child what is expected during the exchange. You cannot anticipate that the child will know what is expected during the exchange period.

For later formats in this series, simply begin with the card as the reinforcer. Introduce the child to wearing the card, vary the number of responses that the child produces before you make a mark on the card, and present procedures for exchanging two stars of one color for one star of a second color.

It is impossible to specify a timetable for implementing the five different formats for the Card Reinforcer, although it would be possible to go through the first three formats in only three or four five-minute sessions. For other children, considerable time may be required to complete these formats. Let the child's performance dictate how and when you introduce the fourth and then the fifth formats.

Remember to reinforce the child verbally while giving a goodie or star, or conducting an exchange. Ideally, we want these comments to replace the tangible reinforcers.

Format 8.1
Card Reinforcer – Format 1

Ratio: 1:1

Schedule: 2 times a day

Setup: Teacher and child sit on chairs of the same height, facing one another. A muffin tin of small edible goodies is at teacher's side. Laminated card (Card Reinforcer) is on the table. Shill should not be needed.

1. Place Card Reinforcer on table in front of child. Smile. CLAP … GOOD.
   Quickly make a mark on the card. Place a small edible on the mark. Allow child to take the edible. Erase the mark. Move the card to right or left.

2. STAND UP … GOOD.
   Quickly make mark on card. Place small edible on the mark.
   Allow child to take the edible. Erase the mark. Move the card to right or left.

3. Repeat step 2 for JUMP, TURN AROUND, SIT DOWN.

4. CLAP. Quickly make a mark on card. Praise the child: GOOD WORK. YOU'RE DOING A GOOD JOB.

   As you praise, place the card around the child's neck. Smile and comment: OH, YOU'RE WEARING YOUR CARD. GOOD.
   After a few moments: EXCHANGE.
   Remove the card. Place edible on mark, allow child to take edible.

If the child does not try to remove the card before you take it off, go to the next format. If the child tries to remove the card, repeat this format until the child's response to step 4 is neutral or positive.

Note: The purpose of moving the card after each trial is to assure that the learner attends more to the card. If the card is in the same place for all trials, the learner can easily learn to ignore it. When it moves, the learner is forced to treat it as a variable. If the learner notices the card, then the card will become associated with the activity and ideally with positive reinforcement.

Format 8.2
Card Reinforcer – Format 2

Ratio: 1:1

Schedule: 2 times a day

Setup: Same as for Format 1.

1. Place Card Reinforcer on table in front of learner. Pat card. Smile. CLAP. Quickly make a mark on card. GOOD CLAPPING.

2. STAND UP. Quickly make mark. GOOD STANDING UP.

3. SIT DOWN. Quickly make mark.

4. Quickly place an edible over each mark. Permit the child to take the edibles one at a time.

5. As soon as each edible is removed, erase the mark that had been under it.

6. GOOD WORK. YOU'RE DOING A GOOD JOB.
   Place the card around the child's neck. Make a fuss over the card.
   LOOK AT YOU WEARING YOUR CARD. PRETTY.
   Permit the child to wear the card for 5-10 seconds.

7. Repeat steps 1-6 with different familiar commands.

Repeat this format once or twice. If the learner becomes disturbed when you remove the card, go immediately to the next format.

Critical behaviors

Make sure child attends to what you are doing. The child will not learn the connection between his behavior and the reinforcement unless the child observes what you are doing.
If the child is not attending, snap your fingers or say WATCH before you make a mark on the card or put a reinforcer on the card.

For this format, you don't provide tangible reinforcers until after three trials. The procedure is like that of the Memory format. At first the child receives a reinforcer for each trial, then for a group of trials.

Format 8.3
Card Reinforcer – Format 3

Ratio: 1:1

Schedule: 2 times a day

Setup: Same as that of proceeding card formats.

1. Place card around child's neck. Smile.
   YOU'RE WEARING YOUR CARD. GOOD.

2. CLAP. Make mark on card. Quickly show mark and tap it.

3. STAND UP. Make mark on card. Quickly show mark and tap it.

4. Repeat for three more commands.

5. EXCHANGE. Remove card. Place it on table.
   Place small edible on each of the marks. Permit the child to take the edibles one at a time. Erase the mark for an edible as soon as the edible has been removed.

6. Repeat steps 1-5 with another set of five commands. Place only three edibles on the card.

Keep the pacing brisk on this format. Present it at least twice a day. Try to prompt the child to hand you the card when you say: EXCHANGE. Hold your hand out as if you want it. (Expect the child to have trouble removing the cord from around his neck.)

Format 8.4
Card Reinforcer – Format 4

Ratio: 1:1

Schedule: 2 times a day

Setup: Same as that of preceding card formats.

1. Place the card around the child's neck. TOUCH YOUR NOSE. GOOD WORK.
   TOUCH YOUR FOOT. NICE JOB.
   CLAP. GOOD CLAPPING.
   Make a mark on the card. Tap it and show it. GOOD WORKING.

2. TOUCH YOUR NOSE. GOOD TOUCHING YOUR NOSE.
   TOUCH YOUR HEAD. GOOD WORK.
   WAVE. GOOD WAVING.
   Make a mark on the card. GOOD WORKING.

3. WAVE. GOOD WAVING.
   CLAP. GOOD CLAPPING.
   STAND UP. GOOD STANDING UP.
   Make a mark on the card. NICE WORKING.

4. TOUCH YOUR EAR. GOOD TOUCHING YOUR EAR.
   TOUCH YOUR KNEE. GOOD TOUCHING YOUR KNEE.
   CLAP. GOOD CLAPPING.
   Make a mark on the card. YOU'RE WORKING HARD.

5. EXCHANGE.
   If necessary, help the child remove the card.
   Place the card in front of the child. Put an edible on each mark.
   Permit the child to take edibles one at a time. After each edible has been removed, erase the mark that had been under it.

Format 4 requires the child to perform for three tasks before receiving one mark. You must make sure that you praise the child and make a mark after each trial.

Format 8.5
Card Reinforcer – Format 5

Ratio: 1:1

Schedule: 2 times a day

Setup: Card Reinforcer, grease pencil, and small edibles or other reinforcers.

Place card around child's neck. THERE YOU ARE WITH YOUR CARD. MY, YOU LOOK GOOD.

1. Present an exchange after the child has earned four marks as specified in Format 4.

2. Place card around child's neck. LET'S DO SOMETHING ELSE.
   Go to another room or go outdoors. From time to time, call the child by name and present a task.
   _____, CLAP. GOOD.
   Mark a mark on the card. Tap the mark and show it to the child.

3. Sometimes present several tasks in succession before making a mark on the card.
   _____, COME HERE … GOOD. CLAP … GOOD.
   Mark on the card. Tap the mark and show it to the child.

4. After about five minutes, say: EXCHANGE.
   Help the child remove the card. Place edible on each mark.
   Permit child to take edibles. Erase marks.

This format goes well immediately before meals. The learner is then permitted to wear the card during the meal. From time to time, the teacher presents a task, making a mark on the card to note success.

Initially, follow these rules about how frequently to make marks: If you present only one task and it has been more than a minute or so since the last task has been presented, make a mark for the single task. If you present two or more tasks in succession, make only one mark for the group of tasks.

Make sure that the child becomes accustomed to wearing the card in *all* situations — dressing, eating, and play activity. And make sure the child receives reinforcement in all these situations.

Using the Card

Once the card becomes a reinforcer to the child, the child is to wear the card throughout the waking day. You can use the card when working on new skills such as shoe tying, using the toilet, dressing, and behavior during meals. When the child does correctly something he is learning in any of these activities, reinforce the behavior by using the card.

Note: This procedure is particularly effective when the child does something spontaneously. Tell the child what he did: GOOD KEEPING YOUR HANDS ON THE TABLE.

Make a mark on card, and tap it.

After the activity, tell the child: EXCHANGE. The child removes the card. The teacher first erases the mark then provides the learner with a single reinforcer.

After about three months of expanded card use, present reinforcers at the end of the day. Direct the child to take off the card: EXCHANGE.

Place something on the card the child finds reinforcing. It does not have to be an edible. It may be a stamp, a tattoo, a toy, etc. Always tell the child why he is receiving the reinforcer. YOU WORKED HARD TODAY. GOOD WORKING.

The card may also be used when the child is outside the customary facility. The card reminds the child that the same rules are expected in the current situation. If the child is agitated, present a familiar task: HERE, HOLD THIS BOOK. After a few seconds, GOOD HOLDING THE BOOK. Make a mark on the card and tap it.

SECTION III

Chapter 9

Working with Children in a Group

Continue to work with each child individually until each has mastered *yes-no* skills (Chapter 7). Then begin to work with those children in a group.

Group practice is more efficient than individual practice. There are three reasons for working with the children in a group.

1. If children respond reliably in a group, you can work with three children in nearly the same time that it takes you to work with one child.

2. It is important for the children to begin to participate in group activities; however, individual sessions three times each day are important when students are instructionally naive.

3. Once you are working with children in a group, it will be possible to use one of the children in the group as a "model" or shill.

Initial teaching tasks *direct each student by using his or her name as part of the instruction.* The commands are taught as, "Jerome, stand up." Later, tasks simply give the student instructions: "Touch the cup. Is this a cup?" The group tasks will require the students to respond together. Therefore, the first teaching involves students responding when you say, "Everybody…"

The Setup

Seat a maximum of three or four students in a semi-circle. If there will be other students in the room, position yourself so that you can watch the rest of the room. Students in the group are to face a corner or blank wall, with their backs to other students in the room. Seat all of the students close to you so you can easily touch each child and hand things to each child, etc. Seat the children on small chairs. Place the chairs close together with as little space between them as possible. You should sit on a chair that is the same height as the children's chairs. Students with Card Reinforcers are to wear them during group work. Award marks during group presentation.

Get organized prior to the lesson. Look over the tasks that you will be teaching and determine exactly which objects you will use. Have those objects ready on a tray or table close to you. If the objects are readily visible, students may be distracted by them or attempt to play with them during the lesson.

Teaching "Everybody"

Shill stands behind group. Quickly touch each child and say, "Everybody ..." (once for each child). If you have a group of four children, you will touch them in succession saying, "Everybody … everybody … everybody … everybody." Pace this part of the format rhythmically then give the group a command, "Everybody, stand up." Use a loud voice when you are giving the group a command. Anticipate that the first time you do this, not all the children

will respond. They are accustomed to being worked with individually. They don't know that "everybody" means all of them.

Your correction must teach each child that he is to respond when you say "Everybody." Therefore, for each child that did not stand up, quickly physically prompt the child to stand up as you say, "Everybody." As soon as everyone is standing, use the same procedure for sitting down. Touch each child while rhythmically saying "Everybody … everybody … everybody ... everybody." Pause. "Everybody, sit down." Gently prod those students who are still standing by saying, "Everybody, sit down." As soon as all students are seated, repeat the procedure. Move very quickly. Vary the commands that you use with the group. Remember the children have been working individually. It will take quite a few trials for them to respond consistently in a group setting.

Critical Behaviors.

- Have the group seated in a tight semi-circle.
- Rhythmically touch each child and say, "Everybody."
- Begin working with the children in a group only after they are at an 85 percent-correct criterion on commands, object identification, and *yes-no* tasks.

Format 9.1
Everybody Format 1

Ratio: Small group (this format is for a group of 4 children)

Schedule: 2 times a day

Setup: Children seated in a tight semi-circle, facing the teacher. Children are facing an undistracting area, with the shill standing behind them. Teacher faces the remainder of the classroom. Objects for presentation in the lesson are out of sight but accessible. Children wear their Card Reinforcers. You reinforce children by quickly making a mark and praising them. Exchange occurs after students complete the format.

1. Touch the first child. Say: EVERYBODY.

2. Touch the next child. Say: EVERYBODY.

3. Touch the next child. Say: EVERYBODY.

4. Touch the next child. Say: EVERYBODY.

5. Scan the group, point to everyone. EVERYBODY, STAND UP.
   Shill quickly reinforces children who stand.

   To correct if a child does not stand up:

   a. Tug at the child and say, "Stand up."
   b. Repeat step a for each child that is not standing.

6. Touch the first child. Say: EVERYBODY.

7. Touch the next child. Say: EVERYBODY.

8. Touch the next child. Say: EVERYBODY.

9. Touch the next child. Say: EVERYBODY.

10. Scan the group, pointing to everybody. EVERYBODY SIT DOWN.

11. Repeat procedures until all children respond to commands on two consecutive trials.

Modify the procedure when the children have learned to respond to the word "everybody." Instead of presenting the word "everybody" to each child, say it only once. Then follow the task.

Format 9.2
Everybody Format 2

Ratio: Small group (4 or 5 children in the group)

Schedule: 2 times a day

Setup: Children are seated in a tight semi-circle, facing the teacher. The shill (optional) is behind them. Children are facing an undistracting area. Teacher faces the remainder of the classroom. Objects for presentation in the lesson are out of sight but accessible.

1. Point to the first child. EVERYBODY.

2. Point to the next child. EVERYBODY.

3. Point to the next child. EVERYBODY.

4. Point to the next child. EVERYBODY.

5. Scan the group, pointing to everybody. EVERYBODY, STAND UP. GOOD, EVERYBODY IS STANDING UP. GOOD.

6. Scan the group, pointing to everybody. EVERYBODY, CLAP. GOOD, EVERYBODY IS CLAPPING.

7. Scan the group pointing to everybody. EVERYBODY, SIT DOWN.

8. Scan the group, pointing to everybody. EVERYBODY, SIT DOWN. GOOD, EVERYBODY IS SITTING DOWN.

9. Scan the group, pointing to everybody. EVERYBODY, CLAP. GOOD JOB, EVERYBODY IS CLAPPING.

The first task prompts the idea that the word "everybody" applies to each child. Each of the subsequent tasks present only one "everybody."

Reinforcement and corrections must be presented immediately. It's a good idea to assign reinforcement to the teacher and corrections to the shill. If the shill corrects, the shill taps the child and repeats the command. Meanwhile, the teacher, smiling, quickly reinforces the children who perform correctly. If there are problems with managing the children in the group, divide it. For instance, if there are four children in the group, and only two of them are responding correctly, change the composition of the group so that there are only three children in the group — the two good performers and one of the poor performers. When the poor performer has learned to respond correctly, add another child to the group. Follow the same procedure to add children to the group. Make sure the children are firm on the tasks they will be expected to

perform in the group. Then add them to the group. The group should probably not have more than five children.

Format 9.3
Everybody Format 3

Ratio: Small group

Schedule: 2 times a day

Setup: Same as for Format 2.

1. Scan the group with your arm, pointing to everybody.
   "EVERYBODY, STAND UP."

2. Scan the group, pointing to everybody.
   "EVERYBODY, TOUCH YOUR HEAD."

3. Point to one child. "JOHN, SIT DOWN."

   To correct: Grab any other children who try to sit down.
   Return them to a standing position.

4. Point to same child. "JOHN, STAND UP."

5. Point to same child. "JOHN, SIT DOWN."

6. Point to same child. "JOHN, STAND UP."

7. Scan the group. Point to everybody. "EVERYBODY, SIT DOWN."

8. Scan the group. Point to everybody. "EVERYBODY, STAND UP."

9. MARYLYN SIT DOWN. Repeat steps 3-8, using a different child for the individual turns.

10. Repeat the entire sequence with different tasks until the group responds with only occasional mistakes.

If the format must be repeated many times, do not present the same order of events. (Do not present four individual tasks followed by two group tasks. Change them so that sometimes there are three individual tasks, sometimes two, and so there are 2-4 group tasks.)

Do not present a total of more than about 15 tasks. Present stand up-sit down as the primary tasks during the early work. Good tasks also include "touch your head" and "touch your nose." Tasks such as "clap" are not as good because the response occurs in an instant, which means that if a

child who had not been directed to clap responds, there is no current evidence that the child produced the response. If the task is to stand up, there is current evidence.

Remember to point to the children who are to respond. (The other children may not know the names of all children in the group; however, they can learn to respond to your point.)

Use the same reinforcement-correction conventions specified for the earlier *everybody* formats. You reinforce, the shill corrects. Make sure that both correction and reinforcement are handled quickly. The more rapidly the sequence is run, the faster the children will learn. (When tasks are presented with long gaps between them, the children are less likely to remember what happened during each task. When they are presented rapidly, less memory is required to discover what leads to reinforcement and what leads to correction.

Expect the children to require quite a few corrections on the various *everybody* tasks. Do not present the *everybody* sequence until the learners are quite firm on the preceding skills. The more the children have been taught, the easier the *everybody* work will be for them.

SECTION IV

Chapter 10
Response Bridging Techniques

At this point in the instructional sequence, the children should be able to identify twenty or more common objects. They should respond consistently to various commands, and they should be able to answer *yes-no* questions about objects and actions. The next objective is to develop childrens' speaking vocabulary. Nonverbal children and those with very little speech will need a great deal of practice before they will be able to make simple statements such as, "This is an eraser," or "I am standing up."

The tasks will do the following:

1. Systematically build vocabulary for new objects and new actions.

2. Systematically build the response phrases that are appropriate in different situations.

   Tasks presented early in this section require short responses. For example, you will say: "EVERYBODY, CLAP." The children clap. Then you ask: "WHAT ARE YOU DOING?" and the children respond, "Clapping." Later tasks require the children to answer specific question chains such as: "WHAT IS THE GIRL THROWING?" The children respond, "A ball." Then you ask: "WHAT IS THE GIRL DOING?" The children respond, "Throwing a ball."

Expressive language is very difficult for low-performing children. The larger the number of words required in a response, the more difficult the task is for them. Therefore, the sequence of tasks builds gradually from short responses to longer ones.

3. Provide increased practice in a group setting. Continue to work with the children in a small group. When correcting a child, always correct the group. Always give the group practice making the correct response instead of focusing attention on the child who made the error. (All children in the group need as many repetitions on as many statements as they can receive each day.)

The tasks that follow will build a bridge from the simplest responses the children make in the first tasks that you have presented to those more difficult tasks taught, for instance, in the *DISTAR Language 1* (*Language for Learning*) program. The children must say four-word phrases relatively fluently before entering the *Language 1* program, although there is some overlap between the tasks that you will teach in this bridge and those tasks at the beginning of *Language 1*.

Pictures are necessary for some of the tasks. There are several ways to teach the tasks involving pictures. If you have already developed your own picture file, it would be possible to use the simplest illustrations from that file. SRA picture cards are also appropriate for teaching these tasks. The most important considerations when selecting pictures are:

1. The pictures should be as uncluttered as possible. “Busy” pictures are distracting, and the children may have difficulty focusing on the details you are describing.

2. A variety of illustrations depicting similar scenes are necessary so the children do not learn to identify one action with only one picture. Try to have pictures of boys, girls, dogs, cats, horses, etc. Include illustrations of any action children are to learn.

Expect to devote several months of work before the groups will be able to perform on the tasks that follow. The acquisition of vocabulary is a slow process, and the development of the ability to respond in phrases may be even slower. Try to make the lessons reinforcing. Realize that these exercises are difficult for the children and must be carefully taught and practiced many times.

Format 10.1
Action Phrases Format 1

Ratio: Small group

Schedule: 2 times a day

Setup: Children are seated facing teacher. Shill is behind children.

1. EVERYBODY, (pause) TOUCH YOUR NOSE.

2. EVERYBODY, (pause) STOP TOUCHING YOUR NOSE.

   To correct children who stop too soon or too late:

   a. Shill prompts with taps as teacher repeats task.
   b. Repeat step 2.

3. EVERYBODY, (pause) TOUCH YOUR HEAD.

4. EVERYBODY, (pause) STOP TOUCHING YOUR HEAD.

5. EVERYBODY, (pause) STAND UP.

6. EVERYBODY, (pause) WALK.

7. EVERYBODY, (pause) STOP WALKING.

8. EVERYBODY, (pause) CLAP.

9. EVERYBODY, (pause) STOP CLAPPING.

Repeat tasks in the sequences that require corrections.

Individual turns. Provide each child with an individual turn that requires the child to produce all actions specified in the sequence above. Change the order of the tasks so different children receive different sequences.

For the exercises that are to come, the children should continue to carry out the action until you tell them to stop. You will ask the question, WHAT ARE YOU DOING?, and you want to make sure that they are performing the action they're supposed to be performing.

Format 10.2
Action Phrases Format 2

Ratio: Small group

Schedule: 2 times a day

Setup: Children seated in a tight semi-circle, facing the teacher and an undistracting area. Teacher faces the remainder of the classroom. Shill is optional.

You and the children will perform actions in this task.

1. EVERYBODY, CLAP.
   WHAT ARE YOU DOING? "Clapping."
   STOP CLAPPING.

   To correct if children do not say "Clapping."

   a. KEEP CLAPPING. WHAT ARE YOU DOING? "Clapping."
   b. AGAIN. WHAT ARE YOU DOING? "Clapping."
   c. ONCE MORE. WHAT ARE YOU DOING? "Clapping."
   d. EVERYBODY, STOP CLAPPING.
   e. Repeat step 1.

2. EVERYBODY, SMILE … WHAT ARE YOU DOING? "Smiling." STOP SMILING.

3. EVERYBODY, CLAP ... WHAT ARE YOU DOING? "Clapping." STOP CLAPPING.

4. EVERYBODY, WAVE ... WHAT ARE YOU DOING? "Waving." STOP WAVING.

Individual turns. Present each child with the tasks specified in steps 1-4.

This exercise is more difficult than the first action-phrases exercise. It requires the children to indicate what they are doing. Expect some of them to respond by saying, "wave" and "smile" rather than "waving" and "smiling."

If children have serious problems with the word endings, change the format so that for each step you provide a model of the correct response. EVERYBODY, WAVE. YOU'RE WAVING. WHAT ARE YOU DOING? EVERYBODY, SMILE. YOU'RE SMILING. WHAT ARE YOU DOING? EVERYBODY, STAND. YOU'RE STANDING. WHAT ARE YOU DOING? EVERYBODY, JUMP. WHAT ARE YOU DOING?" YES, JUMPING.

You make a comment as the action is going on. In this comment, you use the word with the *ing* ending. This prompt makes the correct response easier to produce.

If you use this kind of prompt, repeat the sequence two or three times (immediately after it is first presented during each session). On the third trial, drop the prompts on some of the items near the end of the sequence. The children will probably respond correctly to them. Follow this procedure each time the chain is presented, except drop out more and more of the prompted items. After you have presented the format perhaps 6-8 times, you may need only an occasional prompt to maintain the correct response.

Instances. Teach the action phrases for:

holding a ball
holding a toothbrush
holding _____.
sitting
standing
walking
touching the floor
touching a _____.
jumping
clapping
smiling
waving
opening the door
dressing a doll
coloring
cutting (with scissors)
looking at a book
drawing (a picture)

Other actions would include those that the child is expected to perform during different parts of the daily routine -- scraping a plate, carrying mail, washing, eating, etc.

Try not to use actions that involve pronouns (*me, my*, etc.). These present too many problems for early instruction. The teacher tells the child, TOUCH YOUR HEAD, and then asks, WHAT ARE YOU DOING? The child understandably answers, "Touching your head." A shill is needed to teach these responses. We will deal with them in a later format.

The next format in the sequence requires the children to recognize actions as well as to produce them.

Format 10.3
Action Phrases Format 3

Ratio: Small group

Schedule: 2 times a day

Setup: Children seated, facing teacher. Shill is optional.

1. STAND UP. WHAT ARE YOU DOING?

2. Repeat step 1 for five or six more actions (jump, wave, clap, walk, sit).

3. WATCH ME. Stand up. WHAT AM I DOING?

4. WATCH ME. Clap. WHAT AM I DOING?

5. WATCH ME. Wave. WHAT AM I DOING?

Individual turns. Call on each child to perform the tasks in steps 3-5.

The children may have trouble with this format even if they can produce the various actions. Carrying out a command is one thing and requires one set of behaviors; recognizing an example of that command is another thing, and requires different behaviors. When the children are instructed to "stand up," and are then asked, WHAT ARE YOU DOING? The task is quite easy because the teacher has just told them what they are doing. When the teacher says: WATCH ME, and performs an action, there is no clue about how to "name" that action. So the task is logically harder.

As the direction above implies, the most appropriate correction for mistakes in this format is the Memory format.

Level 1: Tell the answer, then repeat the task: I'M WAVING … WHAT AM I DOING? … WHAT AM I DOING? … WHAT AM I DOING?

Level 2: WHAT AM I DOING? … HENRY, COME HERE … WHAT AM I DOING … Point to object. WHAT'S THAT? … WHAT AM I DOING?

Level 3: WHAT AM I DOING? HENRY, COME HERE … GEORGE, COME HERE … WHAT AM I DOING? Point to object. WHAT IS THIS? … Point to different object. WHAT IS THIS? … WHAT AM I DOING?

Be careful not to give the children commands that might be confused with the command you present. If you told them to clap, for example, and then asked, WHAT AM I DOING?, the response would be "clapping," a response that had been prompted in earlier examples. If in doubt about whether a command is safe, do not present commands. Ask questions about things: WHAT IS THIS? … IS THIS A FROG? … WHAT AM I DOING? If the child can do things like count, use them as interference. EVERYBODY, COUNT … STOP COUNTING … WHAT AM I DOING?

Consider the learner firm on an action after the learner responds correctly to that action on four consecutive trials.

Format 10.4
Action Picture Phrases Format

Ratio: Small group

Schedule: 2 times a day

Setup: Children seated in a tight semi-circle, facing the teacher and an undistracting area. Teacher faces the remainder of the classroom. Pictures for: throwing a ball, opening a door, setting a table, and eating a hotdog. Shill is optional.

Pictures will be used in each of these tasks.

1. Point to each picture. Say a sentence that describes the action. LOOK. THE GIRL IS THROWING A BALL. SHE IS THROWING A BALL. LOOK AT THIS PICTURE. THIS GIRL IS OPENING A DOOR. OPENING A DOOR.

   THIS PICTURE SHOWS A BOY SETTING THE TABLE. HE IS SETTING THE TABLE. AND HERE'S A MAN EATING A HOTDOG. DOESN'T THAT LOOK GOOD, TO BE EATING A HOTDOG?

2. Point to the girl. WHAT IS THE GIRL DOING? "Throwing a ball."

   To correct if the children do not say the entire phrase:

   a. LISTEN. THROWING A BALL. SAY IT WITH ME. "Throwing a ball."
   b. AGAIN, SAY IT WITH ME. "Throwing a ball."
   c. YOUR TURN: WHAT IS THE GIRL DOING? "Throwing a ball."
   d. Repeat step 2.

3. Point to the girl. WHAT IS THE GIRL DOING? "Opening a door."

4. Point to the boy. WHAT IS THE BOY DOING? "Setting the table."

5. Point to the man. WHAT IS THE MAN DOING? "Eating a hotdog."

Try to make the pictures seem interesting when you talk about them in step 1. The model that is presented in step 1 shows that you use the phrase twice. THE GIRL IS THROWING A BALL. YES, SHE IS THROWING A BALL. You can provide only one model for each sentence. If you find that the children have particular trouble with some of them, model them with two sentences before presenting step 2 of the format.

After the children have worked with a particular picture three or four times, they will perform much better. Initially, you may have to do a great deal of correcting simply because they may not know how to express the actions they observe.

The correction is straightforward. First you model the correct answer. You have the children say it with you until they sound firm. You then test them using step c in the correction. Note that you do not respond with them in step 2 or at any time other than steps *a* and *b* of the correction.

Instances. Present examples of at least 15 actions through this format. Try to select actions the children can produce and describe (jumping, clapping, waving, etc.).

For chronic problems of not remembering a particular action, process the action through the Memory format. Consider the learner firm on the item when the learner responds correctly to the item on four consecutive appearances.

Reinforcing the Use of Action Phrases

Once the description of a particular action has been taught, make sure the children use it. The actions should be integrated with other activities. The easiest way to ensure this integration is to refer to actions during other activities or to ask the question: WHAT IS_____ DOING?

Make a list of questions that you might ask with stories. Then use these questions each time you read the story. "The farmer was going into his field. What was the farmer doing?"

In play situations, follow a similar procedure. Interrupt the activity from time to time and make the learner account for some of the action. WHAT IS JIMMY DOING OVER THERE?

Use the Card Reinforcer to award points for good performance. Make a mark on the card and praise the child.

Children will not become facile with the use of action phrases until they have used them hundreds of times. Make sure they receive the practice they need. Especially reinforce the spontaneous use of what has been taught: "Tommy sitting on floor." This is a reinforceable statement.

Use play variations of action routines. Instruct different children to do different things. Then ask one child: WHAT IS TOM DOING? … WHAT IS GEORGE DOING? ... WHAT IS SUZANNE DOING?

Assign different actions. Call on another child to answer questions about what the others are doing. When you refer to the various children, make sure you point.

Format 10.5
Action Phrases Review Format

Ratio: Small Group

Schedule: 2 times a day

Setup: Children are seated in semi-circle. Shill is optional.

1. EVERYBODY, STAND UP.

2. EVERYBODY, CLAP.

3. WHAT ARE YOU DOING?

4. EVERYBODY, SIT DOWN.

5. WATCH ME. Stand up. WHAT AM I DOING?

6. Clap. WHAT AM I DOING?

7. _____, CLAP. EVERYBODY, WHAT IS _____ DOING?

8. IS _____ JUMPING?

9. WHAT IS _____ DOING?

Individual turns. Call on each child to perform some or all of the tasks that appear in this sequence.

The tasks are of three types: (1) those that call for an action; (2) those that ask the question WHAT ARE YOU DOING?; and (3) those that call for a *yes-no* response.

When presenting this kind of sequence, try to make the pattern somewhat unpredictable. The most difficult tasks in the sequence are those you perform. (You don't tell the children what you are doing; therefore, they must remember how to describe the action.) With little trouble, the children should be able to generalize the *yes-no* responses. If they have trouble, use the basic correction procedures described in the *yes-no* section.

You can also introduce picture tasks as part of the action routine, Show a picture of an action that has been worked on earlier, and ask: WHAT IS THE GIRL DOING?

Maintain a brisk pace to this task, and keep it reinforcing. You may want to present it in time with a metronome. Tap your feet and smile. The more musical the practice becomes, the easier it will be for the children to respond together and to remember how to produce the various responses.

Response Chains

During the first part of instruction, we want to make sure the learner describes things that are observable. We want to make sure the learner understands that the purpose of language is to *describe what is*. When the learner says he is clapping, the statement is true.

Part of what the learner must learn is "facts." Facts can't be observed. Rather, they must be memorized to be learned.

The easiest way to teach facts is through response chains. A response chain consists of two or more facts presented in varying order. For example, we may build a response chain that consists of these items: WHAT'S YOUR NAME? … HOW OLD ARE YOU? … WHAT'S YOUR ADDRESS? … WHAT'S YOUR BIRTHDAY? … WHAT'S YOUR BROTHER'S NAME? … WHAT'S YOUR SISTER'S NAME? … WHAT'S YOUR DOG'S NAME?

The chain may also include facts about their house: "WHAT COLOR IS YOUR REFRIGERATOR? … WHAT COLOR IS YOUR FENCE? … HOW HIGH IS YOUR FENCE? … WHAT KINDS OF VEGETABLES ARE IN YOUR GARDEN?

Some of these questions are more difficult than others. Typically, the answer to things the learner can touch and see are easier than answers to questions about things that are not present. (This tendency is particularly noticeable with brain-damaged adults. It is often harder for them to relearn such facts as: WHAT COLOR IS THE RUG IN YOUR LIVING ROOM? than, WHAT COLOR IS THIS RUG?

The most difficult type of task is one that requires the learner to produce a group of correct responses: NAME THREE TYPES OF VEGETABLES THAT YOU GROW IN YOUR GARDEN.

Procedure: Here's the procedure for teaching response chains.

1. Select a group of facts to be taught. Try to make a list so that each new fact introduced is not highly similar to either of the two facts previously taught. If the fact being taught now involves numbers (an address, a statement about age, a birthday, etc.), neither of the two preceding facts should involve numbers. If the fact being taught involves a color, neither of the two preceding facts should involve color, etc.

2. Process one fact through the Memory format (using familiar actions and phrases as interruptions of presentations of the new fact).

3. Process another fact through the Memory Format. Do not use the first fact as interference.

4. Present a chain that involves both facts. Do not always present the facts in order. For example, if one fact is the answer to "How old are you?" and the other is "What's your dog's name?" you would present a chain such as:
   What's your dog's name?

How old are you?

At another time, you would present the same pair of questions but in a different order.

To correct errors in the sequence, apply the Memory format.

5. Use the same procedure to add other facts to the sequence. As soon as a fact has been taught, add it to the chain.

   After the third fact has been firmed, you may use facts as interruptions in memory sequences used to introduce new facts. For example, if you have taught five facts and are now teaching the answer to "When is your birthday?" you could use the question "What is your dog's name?" as an interruption for levels 2 and 3 tasks. You could also use the question, "How old are you?" although the use of the question is far riskier. Like the new task, it involves numbers and the learner many become confused about which numbers go with which answers.

   The goal of adding facts is to achieve a relatively long chain, such as:

   "Hello there, young man. What's your name? … Where do you live? … What's the name of your school? … What's your teacher's name? … Do you have a dog? … Do you have a pet elephant? … What's your dog's name? ... What's your address? ... How old are you? ... Do you have a brother? … What's his name? … Do you have a sister? … How old is your sister? … What color is your dog?…" etc.

   The correction procedure for any mistake within the chain is to tell the child the answer. Repeat the question. Then return to an earlier question in the chain and present all items in the sequence (including the one on which the correction occurred).

   If the child has a chronic problem with any item, process that item through the Memory format then return to the format on which the child made the mistake.

   Present the routine at least once a day. Change it each time so that the order of events is not predictable.

Role Changing

Reinforce the child for asking you some of the same questions you ask. You may discover that after the child has become proficient with the questions in the sequence, the child, with a little prompting, can produce the questions.

1. To prompt this behavior, tell the shill to ask you some questions. Answer each question the shill asks. Praise the shill for asking good questions. Then tell the child: "You ask me some of those questions."

2. Present the same task to the child. “Henry, ask me some questions.”
   The shill prompts by saying a question. If the child has trouble, the shill prompts three questions. These are prompted until the child can produce all three without prompting. Then new questions are added to the list. The shill might first model all questions before the child asks them. When the child asks you a question, answer it.

3. If the children have trouble with this format, introduce a simpler version. Hold up a familiar object: ASK ME WHAT THIS IS.
   The shill responds, “What is this?”
   You reply: A BALL.
   Sometimes this wording confuses children, and they try to ask, “What this is,” rather than “What is this?”
   An alternative is to provide different wording.
   ASK ME ABOUT THIS?
   Shill responds, “What is this?”
   AGAIN, ASK ME ABOUT THIS?
   Shill responds.
   Present the task to the child: HENRY, ASK ME ABOUT THIS?
   Shill prompts.

SECTION IV

Chapter 11
Response Teaching

If the learner has never produced a particular response, "response teaching" is called for. If the learner produces a particular response only when in certain emotional states, response teaching is called for. If the learner can produce the response, but fails to produce it at appropriate times, response teaching is *not* called for; "discrimination teaching" is needed. If the learner cannot produce the response in any appropriate context, response teaching is needed. If the learner cannot say the word *me,* response teaching is called for. If the learner cannot button her blouse, response teaching is called for. If the learner cannot walk, response teaching is called for.

When we teach concepts, a particular response is either appropriate of inappropriate. When we teach motor responses, we cannot hold the learner to criterion of producing perfect responses. We therefore shape, which means that we initially reinforce approximations of the response, beginning with the best the learner is capable of producing. We shift our criterion for reinforcement as the learner improves, so that the reinforceable responses more closely approximate the desired responses. In time, we reinforce only responses that are perfectly acceptable.

In addition to shaping motor responses, we must use strategies for teaching complex behaviors. There are two types that we must deal with: motor behaviors that involve (1) complex motor chains (throwing a ball, buttoning a shirt, riding a bike, walking, etc.); and (2) speech production.

Teaching Speech

Speech production is a special case because the prompts and tricks you use to achieve certain behaviors apply only to speech. Many learners will exhibit no repertoire of words or phrases. Some may point and say unintelligible sounds or screeches, but they will provide very little to work with.

1. The primary rule about teaching expressive language is not to do it when you are teaching discriminations. If you are teaching the child when to stand up or clap, or even to respond to the question, "What are you doing?" do not work on speech production. If you can understand what the learner is trying to say and you're absolutely sure that this utterance is used only for the object or action the verbalization intended, accept the verbalization. If you're sure that "unk" refers to chalk, praise the response when you're working on the discrimination, "What are you touching?" This is not the time to work on speech. It simply disrupts the timing of your presentation and makes it very hard for the child to know what he should do. He tries to respond to the question the teacher asks, but the teacher's behavior shows the child that the response the child produced was not acceptable. For a discrimination it was acceptable.

The simplest practice for working on expressive language is to dedicate about 5 minutes three or four times a day to work on speech.

2. Follow the general rules used in the section, *Shaping*, page 49. Make sure that for most of the trials the learner receives reinforcement. Arrange the contingencies so that the learner receives

double reinforcement for responses that are better than others. Shift the criterion when the learner receives double reinforcement at a high rate.

3. When working on utterances like phrases (a cup) or longer responses (touching a cup), do not use backward chaining. This technique first works on the last sounds, then progressively adds sounds to the beginning of the chain.
   For "Touching a cup," the learner would first say "cup," then, "a cup," and finally, "Touching a cup."
   The practice presents bizarre distortions of what the child is expected to say.

4. Use forward chaining. The practice involves your saying the first part, and the child (and shill) saying the last part. "Listen: Touching a cup. Say it with me, touching a …." Shill and child are to respond, "Cup."
   "Again, touching a… Again, touching a…"
   When the child becomes more proficient and is able to respond without the shill, switch the criterion so the child and shill say, "A cup."
   "Touching a cup. Say it with me: Touching … again, touching …" etc.
   The primary virtue of this procedure is that it always presents the phrase in the same order, touching a cup.

5. For children who have virtually no speech but babble, do not try to shape the babbling. For example, the learner babbles, saying "ba, be, bu, bi, ba … " This behavior is high-rate, stereotyped, and represents the only speech the learner produces. An apparent temptation is to shape this behavior into speech behavior. It won't work. When you reinforce the learner for babbling, the learner will reasonably suppose that he should babble more, which he will do. No speech sounds will be effectively shaped in this situation. The reinforcement is too easily misinterpreted by the learner. If the teacher shows pictures for words that begin with the sound /b/, the learner will simply run off a string of "bi, ba, bu …." and ultimately receive reinforcement for producing the beginning sound of the word in question. If it's a bottle, the child says, "bah" and receives reinforcement. But from the learner's standpoint, all this reinforcement suggests is that the learner should continue babbling, possibly at a higher rate.

To teach this learner the relationship between speech sounds and objects or actions, shape a response the learner has never used in babbling. For instance, if the learner is presented with a sucker and told, "Say sucker," and the learner produces a unique response ("ub" or "ob"), there is little doubt the response is reinforceable. Subsequent work simply shapes the unique response into one that more closely approximates *sucker*.

<u>Teaching Other Responses</u>

Just as it is not wise to shape high-rate babbling behavior, it is not wise to try to shape other inappropriate behaviors. The most effective strategy is to extinguish these behaviors.

Eliminate High-Rate Behaviors

A problem with high-rate behaviors is that they provide the learner with potentially confusing information. If the teacher provides reinforcement for hair combing while the learner is babbling, the learner may assume that the reinforcement is awarded for performing the dual activity. In the future, the babbling behavior may increase.

The solution is to avoid teaching responses in the presence of high-rate behavior like slapping, screeching, or head shaking. Possible solutions to the problem include:

1. Working on behaviors that are incompatible with the high-rate behavior, such as holding something with the hand that delivers the self-abusive slaps.

2. Working on behaviors that tend to be "punishing" if repeated at a high rate, such as stand up-sit down. Work on these until the high-rate behavior ceases or decreases substantially.

3. Restraining the child (holding her firmly) until the high-rate behavior diminishes. This technique is not highly effective but is certainly appropriate for situations in which the learner has lost control.

4. "Tarnishing" the high-rate routine. This technique is highly effective.

To tarnish a routine, place the high-rate behavior *under instructional control* by (a) allowing the learner to perform the behavior, but (b) *requiring a variation of it*. For example, we require the learner to hit himself only with the back of his hand, not the front that he usually uses. You *don't* reinforce this required behavior. You *permit* the learner to hit himself only if he uses the back of his hand. What frequently happens is that the high-rate behavior diminishes. The learner apparently feels that the behavior isn't "reinforcing" anymore (perhaps because it is controlled by somebody else, not controlling somebody else).

When you present a variation of the routine, enforce that variation. Remember, however, if you reinforce the learner: "Oh good, hitting yourself with the back of your hand," the technique will fail. Your goal is to take the "kick" out of the behavior, and at the same time permit the learner to produce it in some form. Tarnishing the routine is best used in connection with some other techniques, particularly the use of incompatible behavior. As soon as the rate of the behavior diminishes, provide a replacement for it that will permit the learner to receive reinforcement. If the learner uses his hand in the high-rate behavior, design a task that uses the hand in a way that is incompatible with the high-rate use of the hand (patting a stuffed animal, for instance). If the high-rate behavior involves the use of verbalisms, introduce either incompatible verbalisms or tasks that occupy the mouth in a way that makes speech impossible (blowing up balloons, for example). Remember, successful performance on these tasks is reinforced.

You'll have to experiment to find effective incompatible behaviors; however, remember that they should involve the part of the body that is involved in the high-rate behavior, and they should be designed so that it is impossible to engage in both this behavior, and the high-rate

behavior at the same time. You must also provide enough reinforcement for this incompatible behavior to become firmly established. Initially, you may cause the incompatible behavior to become a high-rate behavior, which is not desirable. You should then drop the reinforcement for the incompatible behavior so long as the original high-rate behavior has stopped.

Prompts. When you teach new responses, you prompt some behaviors. To prompt a behavior, you help the learner produce it. You support it. You increase the probability that it will happen. The learner is capable of producing some responses. How can you use prompting to help shape what is in the learner's repertoire to achieve a new response? We can illustrate the options with simple behaviors. Let's say we wanted to teach the learner to touch his head. The learner already has some behavior, but not this behavior. How do we use what the learner already has to establish this new response?

Possibly, we could modify the behavior that the learner uses for reaching for things that he wants. This is an operant prompt. The learner knows how to reach for a reward, such as a piece of candy. Instead of teaching head touching as a new behavior, we teach a variation of reaching for candy in which the learner touches his head. The teacher first shows the candy to the learner and places it on the learner's head. The shill keeps the learner's head level.
The teacher says, "Touch the candy." The child reaches, and when the child touches the candy, the teacher holds the child's hand in place. "Good touching the candy."

After the learner performs successfully on four or more trials, the teacher reinforces the child by letting him eat the candy.
Next the teacher touches immediately the child's head, and says, "Touch your head." The chances are the learner will do it.
The teacher holds the learner's hand in place, says, "Good touching your head," and gives the learner a piece of candy.
The procedure is later faded so that the teacher simply touches the learner's head and says, "Touch your head."

There are other types of prompts; however, all have one thing in common. They change the task. They must therefore be dropped at some time. For this reason, you should consider the alternative of not introducing a prompt. Perhaps you can teach the learner the response of touching his head simply by modeling the response. If not, use a prompt but try to remove it as quickly as possible. The longer the learner operates from the prompted presentation, the longer the learner is practicing a variation of the task that must be changed.

Strategies for Complex Response Chains

Complex behaviors, such as tying a shoe or walking, are taught only through a program, a series of objectives or changes in the procedure. The program starts simply and builds ultimately to the complex behavior. Which behaviors are taught first? How are these integrated with the others? Are the behaviors taught within the context of the target behavior, or are the behaviors taught in isolation and then "chained" together?

There are two basic strategies of determining where to start and how to increase the complexity of the response chain.

1. Teach the minimum-necessary behavior first while prompting the support behaviors. Then add the support behaviors.

2. Prompt the minimum-necessary behavior while strengthening the support behaviors. Then add the minimum-necessary behavior.

The strategies refer to the minimum-necessary behaviors and support behaviors.

Minimum-necessary behaviors are those that are most immediate to the response chain that is to be taught. If the chain to be taught is brushing teeth, the minimum-necessary behavior involves initiating behaviors that brush teeth. The learner moves the brush up and down over the surface of the teeth so that they are brushed.

Support behaviors are those that are capable of pre-empting the minimum-necessary behavior. The minimum-necessary behaviors can take place only if other behaviors are present. The learner can brush his teeth only if he holds the toothbrush. Holding (gripping) the toothbrush is therefore a support behavior.

The difference between a minimum-necessary behavior strategy (1 above) and a support-behavior strategy (2 above) has to do with which behaviors are initiated by the learner at the beginning of the program and which behaviors are added. If we used a minimum-necessary strategy, we would begin by having the learner brush. We would eliminate all support behaviors. We would see to it that the toothbrush has toothpaste on it. We would also see to it that the learner would not be pre-empted from brushing if the learner is incapable of holding the toothbrush. (We would fasten the brush to his hand so that he could brush without gripping.)

The support-behavior strategy begins by eliminating (or prompting) the minimum-necessary behavior while the learner works on the support behavior. For example, we manipulate the learner's arm back and forth to achieve the brushing. Note that we are responsible for the brushing, not the learner. The learner simply grips the toothbrush (a support behavior). Later, we add in the minimum-necessary behavior.

The minimum-necessary behavior for eating with a fork is transporting food, on the fork, from the plate, to the mouth. Support behaviors include spearing morsels, holding the fork, and other behaviors that are capable of preempting the minimum-necessary behavior. The test is, "If you don't _____, you can't transport food to your mouth."

The minimum-necessary behavior for buttoning a coat is pushing the button through the hole. Support behaviors include putting on the coat, grasping the button a particular way, moving the material so that it is over the button, and "matching" buttons and holes so the right button goes into the right hole.

The distinction between the minimum-necessary behavior and behaviors that are less immediate is not always obvious. If the operation involves tying a shoe, for example, there are many steps; and the specification of minimum-necessary behaviors changes from step to step. The minimum-necessary behavior for pushing the laces through the loop is not the same as the minimum-necessary behavior for pulling the loops tight.

Walking is complicated although the minimum-necessary behavior can be identified as the "balance" shifting and leg movement. Support behaviors include supporting weight with the leg(s), and following a particular route.

Operations like throwing a ball are less complicated. The minimum-necessary behavior is the arm and wrist movement that accounts for the ball's movement. Support behaviors are holding the ball and releasing the ball. (If you can't hold onto the ball, you can't achieve the arm and wrist motion that accounts for the ball's movement.) Also, foot position, weight shifts, etc., are support behaviors.

Both the minimum-necessity strategy and the support-behavior strategy are justified in different teaching situations. When you teach the support behaviors first, you're *setting the stage* for the crucial teaching; however, you're not doing any crucial teaching. When you teach the minimum-necessary behaviors first, *you're actually teaching the critical behavior. Upon completion of this teaching, the learner is capable of performing examples of "brushing," "throwing," "buttoning," or "riding*." The support behaviors are controlled so that this outcome is possible.

When you teach a learner to ride a bike with training wheels, what kind of program is involved? Support behaviors. The program is justified on the grounds that it provides the learner with practice in "guiding" the handlebars, turning the pedals, braking, etc. The disadvantage of working on these behaviors first is that they may interfere with the minimum necessary behaviors. The learner may learn to lean the wrong way while turning corners. When we remove the wheels, we may discover that although the work with training wheels has provided the learner with the facility in moving pedals and handlebars, the practice has also resulted in a *distortion of the behavior that is critical to riding a bike*.

Training wheels cannot be used for very long. As soon as the learner has begun to master the use of pedals and handlebars, we must begin working on the minimum-necessary behaviors. The strategy for minimum-necessary behaviors would require the learner to balance a bike as the bike is propelled by an outside force. The learner is *not* required to move pedals or turn handlebars. The learner is simply required to maintain an upright balance. The bike continues to move as long as the learner maintains appropriate weight balance.

When the learner masters the task of maintaining balance (the minimum-necessary behaviors) on a guided machine, some of the less immediate behaviors can be added. The learner may now be required to "steer" the bike. A later task may call for steering the bike and pedaling.

A similar pair of options is available for teaching the task of walking. The support-behavior strategy would provide a walker that the learner would push along. The problem with this program is a possible distortion of the minimum-necessary behavior. When the learner is later

required to walk, we may discover that he has learned to rely on the walker and has not learned balance necessary for actual unaided walking. (Another support behavior variation would be walking in chest-deep water.)

Working on the minimum-necessary behaviors, on the other hand, requires the learner to maintain balance when the support behaviors are eliminated. The task may be walking in place, the requirement of which would be to lift one foot completely off the ground and then return it to the ground. The other foot is then lifted.

A Staging Strategy

A third strategy adds the minimum-necessary behaviors in stages. For teaching riding a bike, we might use "spring-loaded" training wheels. When the learner is beginning to ride, the wheels are adjusted so that they will completely support his weight. As the learner becomes facile in manipulating the handlebar and pedals, we readjust the springs so they support the learner only when the bike is stationary. When it is moving, however, they are capable of supporting only perhaps 75 percent of his weight. The spring adjusting is repeated until the learner rides the bike with virtually no support from the training wheels.

If the spring-loaded training wheels are not available, the next-best solution is a trainer who provides varying amounts of support -- first quite a bit, then less. For walking, use a broom handle. Initially, hold the handle close to where the learner holds it. Later, hold it farther from where the learner holds it so it provides less support. Note that this technique assumes that the learner has sufficient strength in his legs to provide necessary adjustments. This program would not be appropriate for learners who suffer from partial paralysis.

Minimum-Necessary Behavior Strategy

The major problem with the use of the support-behavior strategy is that while the learner is practicing the support behaviors, the learner may learn behaviors that interfere with the minimum-necessary behaviors. For this reason, the support-behavior program must introduce the minimum-necessary behaviors very soon. The longer the learner practices the support behaviors while the minimum-necessary behaviors are completely removed, the greater the probability that the learner will develop behaviors that interfere with the minimum-necessary behaviors. The timing is quite tricky. You must work long enough to develop facility with the support behaviors; however, you must not work so long that there is a serious interference problem.

The minimum-necessary behavior strategy eliminates the problem of timing. Since the learner produces the minimum-necessary behavior from the beginning, subsequent variations of the response chain change only through the addition of additional behaviors. The same goal is achieved. The same core behaviors are involved. The only difference is that more behaviors are added.

Because the minimum-necessary behavior strategy is safer, it should be considered as the first possibility. Below are illustrations of this strategy.

To teach throwing, we first teach the learner to throw while seated. The learner's elbow is positioned on a table. His wrist and fingers are positioned back as far as they can be held. The ball is placed on the second joint of the fingers. The learner is instructed (shown how) to rotate his arm forward (with the elbow remaining on the table) and propel the ball toward a target. The learner is reinforced for twenty trials during which the teacher observes the characteristics of his typical attempts, best attempts, and worst attempts. These become the basis for a reinforcement program. The initial schedule is established so that 75 percent of the learner's attempts are reinforceable. The criterion for "double" reinforcement is also established.

The learner continues to work on the program until he has reached a fair level of proficiency. The teacher then introduces an "imitation" program to add the support behaviors. The teacher models how to sit and throw *without* placing her elbow on the table. The learner's attempts to imitate are evaluated and become the basis for a new shaping program. When the velocity of the learner's throws reaches a certain level, the teacher introduces a new "imitation" game. This involves doing the same operation while standing (with the right leg positioned somewhat farther back than the left for a right-handed throw).

The final step in the program involves throwing as part of a "walking" step. The learner takes a backward step with the right leg, throws, and at the same time steps forward with the left leg. This motion provides the conventional weight shift and body movement characteristic of the powerful overhand throw. Now the learner is reinforced for achieving velocity, distance and accuracy.

To teach buttoning as a minimum-necessary program, we usually use a buttoning board. The button is the size of a quarter, and the buttonhole is set back two inches from the edge of the fabric. We orient the button so that an edge is protruding through the hole. We require the learner to (a) grasp the edge of the fabric with a four-fingered grip; (b) place the thumb of the same hand against the protruding edge of the button; and (c) push the button through.

Note that this operation involves only one hand. Note also that none of the behaviors associated with lining up the button, positioning the fabric, etc., are required. The learner simply grips the fabric and pushes the button with his thumb. These are the minimum-necessary behaviors for buttoning. Note that the learner pushes the button away from the body, not toward the body. Frequently, traditional training practices involving a buttoning board require the learner to push the button away from the body. This is a motion that will virtually never be used. If the buttoning board is rotated 180 degrees, it is in a far more productive orientation. The response is the same motion that will be used when dressing.

The response is shaped through a rate-criterion program. Initially, the learner's first ten attempts are used to establish the rate that would allow the teacher to reinforce the learner on about 75 percent of the trials. As the learner improves, the rate requirements are shifted until the learner is able to do a series of buttons at the rate of one second each.

At this time, the program changes. First, we require the learner to use two hands to orient the button so that an edge protrudes through the buttonhole. The criterion for rate is shifted until the

learner is able to perform the entire operation in less than three seconds. (Note that the buttons are still oriented so that the learner is always pushing his thumb away from his body.)

In the final stage of the program, the learner is introduced to smaller buttons, buttonholes closer to the edge of the material, and buttons on articles of clothing that he is wearing. The general progression involves working first on coat buttons, top buttons of pants, and finally shirt buttons. The shift in button size (and proximity of buttonhole to the edge of fabric) requires the learner to modify the grip on the material from a four-finger grip to one that may involve fewer fingers.

Throughout this stage, the teacher would still line up the halves of the garment to be buttoned so that each button goes through the appropriate hole. The teacher, however, provides no other assistance.

Example of Support Behavior Strategy

The program that focuses first on the support behavior holds the minimum-necessary behaviors "constant" or relieves the learner of dealing with them. To hold the minimum-necessary behaviors constant, a prompt is usually required.

To teach the learner to button through the support behavior strategy, we initially require the learner to line up the button and to orient it so that one edge protrudes through the buttonhole. We then pull the button through the hole (the minimum-necessary behavior).

Initially, a time criterion is established. The learner's average time on ten trials is computed. The time for the learner's best two trials is used as the basis for assigning double reinforcement. The worst three trials are used as the basis for providing no reinforcement.

The program is continued, with the shaping criteria shifted until the learner is capable of positioning the button in two seconds or less. Now the program is changed through the addition of the minimum-necessary behavior of pushing the button through the buttonhole (with the thumb). Again, the first ten trials are used for establishing baseline performance. The teacher provides help only when necessary. If the learner is unable to push the button through the hole within three seconds of the time the button is positioned, the teacher provides the minimum assistance to achieve the goal. Reinforcement is awarded according to the amount of help provided by the teacher.

Both the support behavior strategy and the minimum-necessary behavior strategy are workable for teaching buttoning. The reason is that the minimum-necessary behavior is not distorted when the learner works only the support behaviors.

Removed-Component Strategy

Another strategy is sometimes available. This strategy involves removing a behavioral component from the context of the response chain. We illustrate the strategy with shoe tying, then show how is would be used to establish buttoning.

Behavioral component removed from the context of other behaviors. If we analyze the behaviors of some chains such as shoe tying, we discover that there is a component, which appears in all or many of the various "steps" in the task. For example, the skill of holding the laces either doubled or not doubled is a component used in nearly all the steps of shoe tying. Minimum-necessary behavior programs would somehow eliminate such behaviors as holding laces. Support behavior programs, on the other hand, would require the learner only to hold the laces while the minimum-necessary behaviors are removed. Neither strategy is viable. A third possibility is available, however. We can work on this behavior when it is removed from the context of shoe tying. Here is a possible program sequence:

1. The learner holds one non-doubled lace between thumb and forefinger when lace is presented in a variety of positions (requiring the learner to approach it from the side, from above, and from below). The learner must maintain the proper grip involving thumb and index finger, as the other end of the lace is being pulled or jerked.

2. After reaching mastery of step 1, the learner holds two non-doubled laces, one in each hand. The learner grasps the laces one at a time (first grasping a lace with one hand and then grasping the other lace with the second hand). Again, the laces would be presented in a variety of positions.

3. After mastering step 2, the learner holds one non-doubled and one doubled lace. A variety of spatial orientations are again required.

4. The learner grasps two doubled laces, one with each hand.

Upon completion of step 4, the learner begins the actual shoe-tying program. The learning will go relatively quickly because the preceding program has reduced a possible cause of error from many steps. The learner is not required to learn how to grasp laces as part of the training in shoe-tying. Note that work on the grasping behavior is not taught within the context of shoe-tying.

Removing a behavior from the chain is a reasonable programming strategy *if* it is possible to work on the behavior in isolation without seriously distorting it. Some behaviors become terribly distorted when removed from the behavioral context of the terminal response chain. Working on these behaviors in isolation through a component program is not wise. The test: How much difference is there between the behavioral component that is removed from the operation and the same component within the operation? If the removed component requires a greatly different behavior than the one in the terminal operation, teaching the component in isolation will not save significant time. It's probably wiser to figure out some way of working on skills within the behavioral context of the operation. For example, steering a bike that has training wheels does not transfer very much to steering a bike that does not have training wheels. So excessive work with training wheels would not be advised.

To construct a buttoning program that removes some of the component behaviors from the behavioral context of buttoning, we can isolate grasping material or lining up the button, or pushing with the thumb.

When this component is removed from the context of buttoning, the component is not seriously distorted.

The setup that we begin with involves a handle and a coin-shaped, spring-loaded object. The learner grasps the handle with four fingers and presses against the edge of the coin-shaped object with his thumb (pushing away from the body). When the learner has moved the coin so far, the learner receives a reinforcer. The learner is required to pick up the reinforcer *with the same hand* that had been used in the pressing operation. This step assures that each trial involves orienting the hand as well as pressing the "button."

The handle is presented in various orientations. When the learner becomes somewhat proficient at pressing the button, a different reinforcement schedule is introduced. The learner must press the button, clap, press the button, clap, and press the button again before receiving a reinforcer.

When the learner has completed this phase of the program, the learner is introduced to the task of buttoning a coat. The teacher provides whatever assistance is necessary to align the button and to bring it through the hole. The reinforcement the learner receives depends on the amount of assistance the teacher provides, with double reinforcers provided when very little assistance is needed. The teacher would continue to line up buttons and holes on the garment until the learner was quite proficient at buttoning. Also, different articles of clothing would be introduced, progressing toward smaller buttons and "lighter" fabric.

Note that this program is similar to the minimum-necessary program. The difference has to do with the context in which the initial behavior is presented. The minimum-necessary program *always* takes place within the context of some form of the terminal operation. A minimum-necessary program for "throwing" initially involves throwing. A minimum-necessary program for buttoning involves some form of buttoning. The program in which a behavioral component has been removed *never* begins within the context of the terminal operation. If the terminal operation is buttoning, the program begins with some behavior that is taught apart from the buttoning operation. (In the example above, we do not begin with any form of buttoning. We begin with a behavior that is involved in buttoning.)

We can illustrate the difference between the three basic programming strategies by referring to the skill of brushing teeth. Two of the programs begin within the context of brushing one's teeth. Their goal is to simplify the total number of behaviors the learner must execute.

The minimum-necessary behavior program requires the learner to "brush" her teeth. The learner wears a glove to which the toothbrush is attached. The purpose of this program is to remove the behavioral components associated with grasping the toothbrush. No grasping is necessary. The toothbrush is already prepared with paste. The learner's hand is positioned so that the toothbrush is in contact with the front teeth. All that remains for the learner to do is brush.

The support-component behavior program deals initially with those behaviors that would preempt the learner from brushing if no glove were used. For example, the program may begin with exercises in "opening" the mouth, as the teacher brushes the learner's teeth. Another

component behavior program might begin by requiring the learner to maintain a grip on the handle of the toothbrush as the teacher manipulates the brush so that the operation is achieved. Note that both programs are conducted within the context of brushing teeth. The learner, however, does not execute any behaviors that account for the brushing. The learner simply engages in behaviors that ultimately are required if the learner is to brush her own teeth.

The removed-component program is different from either program above in that the program begins with component behaviors that have been removed from the context of brushing teeth. For example, the learner may be required to imitate the teacher as the teacher opens her mouth, smiles with front teeth visible, and performs the other facial movements that are "component behaviors" of brushing. When the learner is introduced to the actual act of brushing teeth, the learner will use the behaviors that are taught through the removed-component program.

Another example of a removed component program is one in which the learner holds the handle of a toothbrush and matches the orientation of a toothbrush held by the teacher. The teacher, for example, rotates the toothbrush so that the bristles would be horizontal, vertical, facing away from the learner, parallel to the learner, and facing toward the learner. Note that no actual brushing takes place in these exercises. The learner is simply required to work on orienting the brush.

Behaviors that are most amenable to the removed-component strategy are those that remain somewhat independent of others in the terminal operation. For instance, opening the mouth remains somewhat independent of the hand motions required to brush teeth. Therefore, either the hand motions or the mouth opening can be removed from the operation, taught in isolation, and then integrated with the others.

The idea is to achieve the terminal behavior as quickly as possible. The idea is not to see how many behavioral steps you can identify, how elaborate a program sequence you can construct, and how many "small steps" you can create before you arrive at the terminal operation.

Use the removed-component program when the terminal behaviors are quite complicated and involve coordination of many body parts or movements.

1. Identify the various support behaviors involved in the terminal operation. Select one or two that appear most frequently in the operation or those that present a great potential source of error. (If the learner fails to perform the component, the operation cannot be achieved.)

2. Check the appropriateness of the strategy for these behaviors by asking: Are there components that can be removed from the terminal operation without being seriously distorted?

If the answer to the question is "yes," consider first teaching the removed component in isolation, then integrating it with the minimum-necessary behaviors.

Conclusion

The effective teacher of the low performer must have far more skill and knowledge about teaching than the teacher of higher performers. The reason is that the low performer makes a much larger range of errors than the higher performer, and effective teaching for the lower performer must be many times more carefully conceived than that which is effective with the higher performer.

The work with the lower performer has a smaller return than that for the higher performer. When a teacher begins work with the low performer, she does not know how far or how fast the learner will master skills. Certainly, even with the most effective sequences and execution, the teacher will be unable to bring many learners into the range of "normal performance." The work, however, will guarantee the following:

- The learner will learn more than would be possible with less articulate practices;
- The learner will have far greater opportunities following the successful instruction;
- The initial work sets the stage for the learner to continue to progress over years and years.

Finally, successful work with the lower performer assures that the interactions between child and either teacher or parent will be more reinforcing for both parties. The parent or teacher will have far more instances in which they are able to interact with the learner positively, and the learner will have far more opportunities to engage in activities that are reinforcing to the learner.

DIRECTORY OF FORMATS