

## Procedures training for students who are verbal

### Preface

This training module is designed as a guide for Program Directors, Program Coordinators, and other supervisory personnel. Its purpose is to serve as a prompt for the supervisor's activities so that students served by his/her instructional team acquire and regularly perform necessary classroom and school-wide procedures.

The module considers problems associated with defining procedures, the specifics of teaching those procedures, and the generalization and maintenance of the procedures once they are taught. This module is specifically designed to assist with the problems of teaching procedures to students who can utter or otherwise communicate short phrases when requested to do so (we'll call them "verbal students" even though this label is not precise). The reason for the concentration on these students is two-fold: (1) the problems associated with defining what is to be taught when teaching a procedure, actually teaching the procedure, prompting the procedure when it is essential to perform it, and providing verbal praise following the performance of the procedure all depend on whether or not the student can utter (or otherwise communicate) short phrases on command, and (2) the great majority of students attending TIEE schools can easily utter short phrases on command. Problems associated with teaching those students who cannot emit short phrases on command (or otherwise communicate them) are not part of this module. You might wonder why. It all has to do with prompting and self-management. Students who, for this module, we are calling verbal should not be physically prompted to perform classroom and school-wide procedures; more often than not, their prompts should be verbal and of a special kind that this module will describe very clearly. By contrast, students who cannot utter short phrases on command should be prompted physically and not verbally (because verbal prompts for these students tend to be difficult to fade). So, these two types of student present huge differences in the curriculum and overall teaching method, even when the procedure we ultimately want them to perform is the same (e.g., wash hands after toileting).

Despite the curricular and instructional differences posed by the two types of student, there nevertheless are some important ways that the processes involved in defining and teaching a procedure are the same. These have to do with the performance of members of the instructional team. The team must achieve a consensus on several matters, including that teaching a particular procedure is important, the behavioral definition of the procedure, who will conduct the initial teaching of the procedure, and so on. The team must also achieve a person-to-person consistency concerning prompting and reinforcing the performance of the procedure when it is appropriate to do so and for as long as the procedure is deemed relevant. If the team fails in these matters it will almost certainly be the case that the procedure will fail to be performed regularly, will fail to be performed precisely, will fail to be maintained, and will fail to generalize to other situations. Make no mistake: teaching students a procedure is very easy compared to doing all that is necessary—program wide—to ensure that the procedure is actually performed. Orchestrating the performance of the members of the team to achieve consistency, precision, maintenance, and generalization is the responsibility of the team's supervisor, whose role is therefore critical in determining the level of success in teaching classroom and school-wide procedures.

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## Section One: Procedures and Their Analyses

### I. What is a procedure?

**Definition.** A procedure is a sequence of steps performed more or less the same way time after time.

**Relationship between “procedures” and “chains.”** Behavior analysts call a procedure a chain because each behavior gives the appearance of being “linked” to the behavior that comes before it and the behavior that comes after it.

The term “procedure” is preferred to the term “chain” for at least a couple of reasons: (1) the latter has the aversive connotation of being “chained up” or “chained in” that is not connoted by the former, and (2) sequences of behavior in school, such as getting ready for class, managing one’s materials, sharpening one’s pencil, using the bathroom, and so on are commonly referred to as routines or procedures and not as chains.

Calling each behavior in a procedure a “step” is an improvement over the term “link” because a step can be taken only after the previous step and must be taken before the next step. In other words, “step” connotes forward progress. “Link” is, if anything, bi-directional. A “step” connotes a recipe or a walk, which, typically, are positive experiences that are not connoted by the terms “chain” and “link.” These issues of connotation aside, the two terms, “chain” and “procedure,” otherwise refer to the same behavioral phenomena, and behavior analytic research on teaching behavior chains is useful, although the great majority of it pertains to teaching procedures to individuals who are not verbal.

**Examples of procedures.** Consider the following examples of procedures for our verbal students:

Measuring with a measuring tape

Subtracting with regrouping

Getting another student to stop pestering

Crossing the street where there is no traffic light

Going from the bus to class

Entering class and managing belongings at the beginning of the day

Distributing materials at the beginning of class

Resolving conflict with another student (rock/paper/scissors)

Using the restroom

Others?

### II. Why do we look for, define, and teach school/classroom procedures?

**Department, decorum, and socially mature attitude.** The school program should give the appearance of a professional office and not give the chaotic appearance of a bargain-basement sale the day after Christmas.

**Efficiency of operation.** Once students regularly perform certain procedures, teachers have more opportunity to teach other skills including adaptive behaviors and alternative behaviors that replace problem behaviors students otherwise will display.

**Self-management.** Teaching procedures (the right way) to verbal students gives us the opportunity to promote self-management, which means that the student is more likely to do something now to alter the likelihood that s/he will do something later that we regard as desirable.

**Important life skills.** Many school/classroom procedures are appropriate in non-school settings so we will have taught students important generalizable life skills.

**Plentiful positive reinforcement.** There will be less punishment and more positive reinforcement for our teaching the students.

Others?

### III. Analyzing procedures

**Just the right size.** To teach a procedure efficiently and effectively, we must first analyze the procedure into steps that are just the right size for the students we are going to teach. Consider the following examples:

#### **Measuring with a measuring tape**

Hook the tape to one end of object to be measured  
 Pull the tape container until the tape is stretched to the other end  
 Read the number of inches on the tape  
 Allow the tape to recoil into the container

**NB:** This analysis might not be adequate, for example, for the student who cannot hook the tape because s/he fails to hold the tape container so that hooking the tape's tab is easy to perform. For that student, we may need to include a step on holding the tape's container. This analysis will not work for those students who cannot read the number of inches. That skill will need to be taught first.

#### **Subtraction requiring regrouping (i.e., borrowing)**

Check one's column for relative value of subtrahend and minuend  
 If subtrahend smaller, subtract; if minuend smaller, take ten one's from minuend's ten's column and add to minuend's one's column and then subtract  
 Check ten's column for relative value of subtrahend and minuend  
 If subtrahend smaller, subtract; if minuend smaller, take ten ten's from the minuend's hundred's column and add to minuend's ten's column and then subtract  
 Continue similarly until entire problem is solved

**NB:** This analysis will not work for problems that have minuends with zero tens or zero hundreds.

#### **Getting another student to stop pestering**

Tell the student to stop  
 Tell the teacher

**NB:** "Tell the teacher" is a good idea in school, but it limits generalization of the procedure.

#### **Crossing the street where there is no traffic light**

Stop at the curb  
 Look both ways for oncoming cars that would hit you if you walked across the street  
 Wait for no cars that would hit you if you walked across the street  
 Walk across the street

**NB:** Step two and three have a contingency that will not be necessary for more than a few students.

## IV. Three properties of all procedures

**1. The occasion for the procedure.** A procedure must have an occasion on which it is appropriate to be performed (i.e., if the procedure is performed, reinforcement is likely).

**Measuring with a measuring tape:**

When you need to know how long something is. . .do this. . .and you will know how long it is.

**Subtraction requiring regrouping:**

When you need to know how much is left. . .do this. . .and you will know how much is left.

**Getting another student to stop pestering:**

When another student is pestering you. . .do this. . .and the student will stop pestering you.

**Crossing the street where there is no traffic light:**

When you need to cross a street that has no traffic light. . .do this. . .and you will get across the street safely.

**NB:** The occasion for doing the procedure combined with the result of doing the procedure provides the rationale for the procedure. This is the only “genuine” rationale because it identifies the naturally occurring reinforcer for performing the procedure. Knowing the naturally occurring reinforcer for performing the procedure is therefore critical to instruction because it means that we must point the student’s attention to it when it happens and we must arrange instructional reinforcers to coincide with it so that its value grows as a result of the pairing of the two. If we fail to do these things, teaching the procedure ultimately will fail, because the students will not perform the procedure unless prompted by the teacher or punished by the teacher for failing to perform it, and they are not likely to display any generalization to non-school environments.

**2. Steps.** Each step has an occasion that is created by performing the previous step.

**Measuring with a measuring tape:**

You can pull the tape out of the container only after it is hooked on to the object.

**Subtraction requiring regrouping:**

You can subtract a larger subtrahend in the one’s column from a smaller minuend in the one’s column only after you borrow ten ones’ from the minuend’s ten’s column.

**Getting another student to stop pestering:**

You tell the teacher that someone is bothering you only after you tell the person to stop.

**Crossing the street where there is no traffic light:**

You can walk across the street only after you determine that no cars are coming that might hit you if you walked.

**NB:** This means that a procedure is not just a list of behaviors. Lists of behaviors and procedures are not taught in the same way. The components of a list may be taught at any time and there is no linkage between the components of the list; whereas, a procedure must be taught as a sequence precisely because there is a linkage requirement. One step follows the other.

**3. All steps can be analyzed further if needed.**

**Measuring with a measuring tape:**

A student who fails to hook the tape on the object may require training to locate the edge of the object

**Subtraction requiring regrouping:**

A student who has not yet mastered subtraction facts will require additional training on that procedure before beginning to master the regrouping procedure.

**Getting another student to stop pestering:**

A student who fails to get the teacher's attention may require training on how to obtain the teacher's attention

**Crossing the street where there is no traffic light:**

A student who dallies in the middle of the street may require training on walking quickly all the way across the street

**NB:**

This means that we should define procedures so that they are teachable efficiently and effectively for most students, leaving for further analysis any procedure that proves difficult for some student to acquire.

## Section Two: How to Teach Procedures to Verbal Students

### I. Overview of the repertoires involved in a procedure

The skilled non-verbal student can perform many complicated procedures if properly taught. However, very intensive and time-consuming teaching is necessary. Moreover, because physical prompting is often required, the teacher must be close to the student as the procedure is being taught. In addition, no matter how well the procedure is learned, the nonverbal student will have several limitations, including limitations in self-prompting, generalization, modifying the procedure to fit new circumstances, and teaching others.

The skilled verbal student can do much more than perform the procedure. Verbal students can describe the procedure, they can discern when the procedure is being performed correctly, and they can use the description or rules of the procedure to guide their own performance as well as to teach others. Verbal students are also easier to teach because they can learn in groups, they can be prompted from a distance, and they can learn to prompt themselves. They also have the potential to teach others.

The advantages accruing to the verbal student depend on what and how we teach that student. If we teach the student a set of rules that describe important steps in the procedure, there is a greater chance that the student will be successful in performing the steps once we have uttered a rule as a prompt, and there is a greater chance that the student will self-prompt performance of the procedure by uttering the appropriate rule. If we teach the student to observe the steps of the procedure before actually teaching how to perform them, there is a greater chance that the student will perform correctly on the first attempt. In other words, in order to give the verbal student the greatest advantage in learning how to perform a procedure, it is important that we spend the time teaching a set of rules and teaching what the procedure looks like in addition to teaching how to perform the procedure.

The skill involved in a procedure for verbal students is most complete when it has been taught as three repertoires, a verbal repertoire, an observer repertoire, and a performer repertoire. If taught properly, these repertoires will interlock or work together to provide self-managed performance under control of the naturally occurring reinforcer(s). Typically, we start training with the verbal repertoire because saying the rules of the procedure while learning the observer and performer repertoires is likely to help the students learn those repertoires more efficiently.

### II. Defining the verbal repertoire and the verbal repertoire curriculum

**Definition.** The verbal repertoire consists of the rules relevant to the procedure that students will learn to utter.

Yes, we could call it the “rule repertoire,” but we want to emphasize that the student will utter (i.e., verbalize) the rules, ultimately “to himself,” as a prompt to perform appropriately.

**The verbal repertoire and other things that might be said.** For some procedures, students will need to say something as part of performing the procedure. For example, in order for a student to make a greeting, the student must say “Hi,” or something similar. This kind of utterance is considered part of the performer repertoire and not part of the verbal repertoire, because it is one of the steps in the procedure called “giving a greeting,” and is not a rule for what to do during that step. However, it might be that, in this example, the rule the student has memorized is “Say, Hi.” In this case, the rule closely approximates the performance (cf., “say, hi” and “hi”). That’s so much the better for teaching the student, because the sameness will make it easier. Still, the distinction between the two repertoires holds, and the term “verbal repertoire” is to be reserved for the rules.

**What rules?** It is extremely important that simple rules be devised so that students will be able to utter them as required and staff members will be able to utter them as needed (for prompting quality student performance and reinforcing quality student performance). Whenever there is a choice between words, choose the one that is more frequently used by the students. Consider the following examples:

#### **Measuring with a measuring tape**

Hook tape to one end of object to be measured

“Hook it to one end” or simply “hook it.”



Pull tape container until tape is stretched to the other end  
 “Pull gently until you reach the other end” or simply “pull it.”

Read the number of inches on the tape where the tape reaches the end of the object  
 “Read the number of inches” or simply “read it.”

Allow the tape to recoil into the container  
 “Let the tape roll up” or simply “release it.”

### **Subtraction requiring borrowing**

Check one’s column for relative value of subtrahend and minuend  
 “Check one’s column.”

If subtrahend is the smaller number, subtract; if minuend is smaller, take ten one’s from minuend’s ten’s column and add to minuend’s one’s column and then subtract  
 “Borrow if necessary and then subtract”

Check ten’s column for relative value of subtrahend and minuend  
 “Check ten’s column.”

If subtrahend is the smaller number, subtract; if minuend is smaller, take ten ten’s from the minuend’s hundred’s column and add to minuend’s ten’s column and then subtract  
 “Borrow if necessary and then subtract”

Continue similarly until entire problem is solved

### **Getting another student to stop pestering**

Tell the student to stop  
 “Tell the student to stop” or “Say stop.”

Tell the teacher  
 “Tell the teacher.”

### **Crossing the street where there is no traffic light**

Stop at the curb  
 “Stop.”

Look both ways for oncoming cars that would hit you if you walked across the street  
 “Look.”

Wait for no cars that would hit you if you walked across the street  
 “Wait.”

Walk across the street  
 “Cross.”

**Verbal repertoire curriculum.** The ultimate goal of procedure training is for the student to say the rule as a self-prompt to do the right thing. Even better would be a sub-vocal prompt; that is, we want the student to say the rule “to himself.” Before the student displays such self-management, however, the student should be able to say the rule when, for instance, we prompt the student’s performance by asking: “So, what’s next” or “Tell me the rules for. . .” This “indirect verbal prompting” is highly desirable because it sets up a situation in which the student first says the rule and then performs accordingly; yet, the teacher’s prompt does not tell the student what to do. It’s the rule that “tells” the student what to do, and, as soon as this relationship between rule and performance happens, we say that the performance is “rule-governed.” In order to benefit from indirect verbal prompting, the student must be able to utter the rule and doing so correctly must occur virtually without regard to how the teacher says the indirect prompt, without regard to which teacher makes the indirect prompt, and without regard to where the indirect prompt is made. It is impractical to train all of these possible generalizations directly; however, the student can be taught to say the rule in a wide variety of imaginary settings during the time that the rule is being learned.

If we reorder this learning sequence, we see that the first skill the student must learn is the to utter the rules of the procedure. Following that, we will need to transfer the saying of the rule to simple questions about the procedure that, later on, will become indirect prompts (e.g., “What would you say if. . .”), as well as other imaginary settings that represent the range of likely generalization. This is as much as we can accomplish in training the verbal repertoire all by itself. From here on, the verbal repertoire is trained to “interlock” with the observer repertoire and with the performer repertoire. In order to accomplish these goals, it is necessary to teach the observer and performer repertoire, which will be discussed later in this module.

### III. Model—Prompt—Test—Repeat until firm

Begin verbal repertoire training with a very easy rule if at all possible. Remember, students need to be successful about 70-80 percent on the first trial. Consider the following script:

“Today, we’re going to talk about what to do when a student is bothering you.”  
 “Listen, here’s the first rule about what to do when a student is bothering you”  
 “Tell the student to stop.”  
 “Say the first rule about what to do when a student is bothering you.”  
 “*Tell the student to stop.*”  
 “Yes, tell the student to stop.”

Even if all students emit the correct response at this time, the response should be considered fragile. It requires firming. One or two trials should help a lot. Like this:

“Again, say the rule about what to do when a student is bothering you.”  
 “*Tell the student to stop.*”  
 “That’s right, tell the student to stop.”  
 “Again”  
 “*Tell the student to stop.*”  
 “Wow, you got it!”

If the students are mid-level students in the Community Living Program or are comparable in skill level, they are not yet firm and they will require one or two “memory paradigm” trials. Like this:

“Everybody, what school do you go to?”  
 “*Cook Education Center*”  
 “That’s right. Cook Education Center” “Now, say the rule about what to do when a student is bothering you.”  
 “*Tell the student to stop.*”  
 “Fantastic. Tell me your teacher’s name.”  
 “*Mrs. Jones.*”  
 “And, your school?”  
 “*Cook Education Center.*”  
 “Say the rule about what to do when a student is bothering you.”  
 “*Tell the student to stop.*”

Once the student is firm following the model, the teacher begins to transfer the utterance to possible scenerios involving the procedure.

“O.k., so what’s the first thing to do if another student is bothering you?”  
 “*Tell the student to stop.*”  
 “That’s right, ‘Tell the student to stop.’”  
 “So, what should Suzy do if another student is teasing her?”  
 “*Tell the student to stop.*”  
 Yes, Suzy should. . . Raise “should” so it sounds like a question.  
 “*Tell the student to stop.*”  
 What should Jimmy do if a new student is bugging him?  
 “*Tell the student to stop.*”

At this point, the teacher should model the second rule about what to do when someone is bothering you.

“You are doing fantastic on the first rule.” (Raise one finger to denote one.) Here’s the second rule (raise a second finger to denote two) about what to do when someone is bothering you: ‘Tell the teacher.’”

“Say the second rule.”

“*Tell the teacher.*”

“Once more.”

“*Tell the teacher.*”

O.k., so if someone is bothering you, what should you do **after** you tell the **student** to stop”? (Punch the words “after” and “student”)

“*Tell the teacher.*”

“That’s right, **first** you tell the student to stop, and **second**, you tell the teacher.” (Punch “first” and “second” and further emphasize with hand thrust and finger raise.)

“What do you do **first**”? (Punch “first” and further emphasize with hand thrust and finger raise.)

“*Tell the student to stop*”

“That’s right, and what do you do **second**”? (Punch “second” and further emphasize with hand thrust and finger raise.)

“*Tell the teacher.*”

“What do you do first”?

“Tell the student to stop.”

“What do you do **second**”? (Punch the word “second”)

“Tell the teacher.”

For lower performers, it will probably be necessary to run the “memory paradigm” again. Then, generalization scenarios can be introduced.

“All right, suppose a student is teasing Suzy. What should Suzy do first”?

“*Tell the student to stop.*”

“Then what should Suzy do”?

“*Tell the teacher.*”

Choose a lower performing student in the group and do the following check:

“O.k., Jimmy, suppose a student is pestering you. What is the first thing you should do”?

“*Tell the student to stop.*”

“Then what”?

“*Tell the teacher.*”

“That’s exactly right.”

#### IV. Generalization must be programmed

It has already been shown in the sample scripts above how to accomplish a certain amount of generalization. We can improve greatly on what is already accomplished by programming generalization across the student’s day. Consider the following:

Some teacher might say, “I understand you know what to do when someone is bothering you. Tell me.”

“*Tell the student to stop and tell the teacher.*”

“Yes, that’s exactly what to do, because the student will stop bothering you and you can learn much better.

Did you hear that, everybody, Mary knows the rule about what to do when a student is bothering her.”

In order for this strategy to be most effective, all personnel who make contact with the student must be prepared to ask such questions at the time that the student is most likely to emit the correct answer. This is an incidental teaching (or generalization) activity, not an initial teaching session. Still, some students will make errors, so the staff members who asked the question must also be prepared to correct the student with the exact wording of the rule or rules that were said incorrectly.

## V. Problems in teaching the verbal repertoire

**Students who can't say it.** Consistently making errors is a very bad thing—we want to organize tasks and their instruction so that students make as few errors as possible. Students should be presorted into those who can learn to say short phrases and those who probably cannot. New staff members will probably do just fine teaching the verbal repertoire to students who present little challenge in learning to utter short phrases. However, new staff members should not be expected to teach the verbal repertoire to students who have difficulty learning it right away. If a new staff member finds out that such a student is in his/her group, the supervising professional needs to be told on that day or sooner.

The student who garbles the response probably should be culled from the group of verbal responders. This student will need more. Please don't go on with this student unless you know exactly how to teach a verbal response to such a student. Just stop and go on to some other task or have this student engage in a "sure-fire" task while you continue with the other students. Ask for assistance. Continuing with such students will not have a positive outcome.

**Students who don't say it.** Students who do not respond when it's their turn pose a huge problem because they (a) are not practicing the behavior that will be advantageous for them to master, (b) they are practicing lousy learner behavior (i.e., they are just sitting there), and (c) the teacher has lost an opportunity to reinforce desired behavior or correct an error. Again, students should be presorted into those who will respond and those who are not likely to respond.

New staff members can work with students who fail to respond initially, but only if they start responding quickly. If they do not start responding right away, they should be given something else to do while the rest of the group is instructed. The supervising professional needs to be told on that day or sooner.

There are a couple of things to do to get a non-responder to respond. First, the teacher should spend a moment talking to each student to obtain clues as to who, if anyone, is likely to be a non-responder on that day. If you can get the student talking, you're very likely to get the student to respond during the lesson. If you can't get the student talking in casual interaction, you can ask the student whether or not s/he wants to participate in the lesson, stipulating that the student will be required to talk if s/he participates. Accept "no," by giving the student "sure-fire" activities. Some will begin to join in once they hear other students responding and particularly if you are having fun with the lesson. Finally, some students will begin responding if the teacher prompts: "I need to hear everybody."

**Correct errors immediately.** It's so central to what we do that it seems unnecessary to speak to it here. Nevertheless, correct all errors immediately and, in the case of verbal repertoire errors, correct them to the group.

Two types of error are possible in the verbal repertoire training described above. There are possible errors of fact and there are possible errors involving deductions. Factual errors can occur when teaching the rule statements. For example, at the very outset, students are asked to say the rule "tell the student to stop." The most likely error is that some student will just say, "Stop!" Here's how to think about it and what to do. The error is one of fact. That is, the answer to the question requires no deduction, inference, or generalization. As such, the teacher corrects the error by merely restating the fact. Here's how it goes.

"My turn. (Hold up your hand and keep it up.) Listen, (pause) Say the first rule about what to do when a student is bothering you. **Tell** the student to stop." Punch the word "tell" as a prompt.

(Some students might respond with you and that's o.k. only so long as they are correct. If not, you must correct "My turn.")

"Say the rule about what to do when a student is bothering you."

"**Tell the student to stop.**" Some of our students are likely to mimic the punched prompt. That's o.k. The emphasis will go away all by itself if you do not attend to it.

Deduction errors occur when the student is asked, for example: "What should Suzy do if someone is bothering her?" The answer is: "Tell the student to stop and then tell the teacher." If the student says anything else, the best correction is not to say the rule but have the student say the rule, as follows:

“What should Suzy do if someone is bothering her”?

“*Tell the teacher.*”

“Whoa, what are the rules for what to do if someone is bothering you”?

“*Tell the person to stop and then tell the teacher.*”

“O.k., so what should Suzy do if someone is bothering her”?

“*Tell the person to stop and then tell the teacher.*”

“That’s right. Now try to remember those rules.”

The critical teaching strategy that applies in situations other than those involving errors of fact is that the error correction cannot involve the teacher saying the answer. If the student could not say the rule when directly asked for the rule, the student is in no position to perform a deduction, even one so simple as that described in the script. Moreover, if the student can only give the answer to the deduction as an echo of the teacher’s uttering the rule, the student hasn’t made a deduction at all. It was a phantom deduction.

#### IV. Defining the observer repertoire and the observer repertoire curriculum

**Definition.** The observer repertoire consists of all the discriminations necessary to determine whether the procedure is being performed correctly or incorrectly.

The sophisticated observer repertoire will include all the discriminations one makes regarding one’s own performance at the time the performance is occurring as well as those discriminations necessary to determine whether another person is performing the procedure correctly. Initial training is only of the latter, in part because of the technical difficulties posed by teaching the former.

**Observer repertoire curriculum.** Teaching the student how to observe the procedure is very helpful in teaching the student to perform the procedure, to self-manage practice and performance of the procedure, and to teach (or at least assist in the teaching of) the procedure. To the extent that the student can detect the critical features of the procedure and what they are to look like, the student is better able to modify his own behavior to conform.

The observer repertoire curriculum emphasizes detecting whether a procedure or a step in the procedure is performed correctly. Procedures differ widely in the level of difficulty in performing such discriminations and the observer repertoire curriculum for each procedure will be simple or complex accordingly. In the case of a relatively simple procedure and one that students already have had some exposure to, like the procedure for what to do when another student is bothering you, the observer repertoire curriculum might have just a single component. That is, it is likely that no separate training need be devoted to each of the two steps in the procedure. On the other hand, a procedure that is quite new to students and one that also involves some critical discriminations, like those involved in measuring with a tape measure, the observer curriculum probably needs to involve several steps. Hooking the tape to one end is a possible problem. So is pulling the tape to the other end of the object to be measured. Reading inches is certainly a problem because it commonly happens that the inch read is actually beyond the measured object.

**Examples and Non-Examples** The best method for teaching what a procedure looks like is to present examples and non-examples of the procedure. That leaves us with having to decide several things. What non-examples will be presented? Who will present the examples and non-examples? How will the examples and non-examples be presented? Let’s deal with these items in reverse order.

**How will examples and non-examples be presented?** In keeping with the adage that a picture is worth a thousand words, we want our examples and non-examples, if at all possible to be demonstrations rather than descriptions of the procedure. In addition, because procedures involve a sequence of steps the best demonstrations are live or video. Video has several advantages so should be used whenever possible. First, the procedure can be demonstrated more precisely with video if only because we can choose which of several “takes” to display. Second, the video permits focusing in on critical attributes of the procedure to help the students attend to what is most important. Third, video can be stopped to focus attention even further if necessary. Finally, video allows the teacher to attend to the students to a greater degree than is possible when the teacher is performing a demonstration.

**Who can present examples and non-examples?** Students are not allowed to present examples and non-examples during teaching of the observer repertoire. Only the teacher is permitted to present examples and non-examples. However, it's not that simple. Not all teachers should be permitted to present examples and non-examples. The supervisor must see to it that those staff members identified for teaching a particular procedure know exactly what non-examples to present (examples and non-examples cannot be made up at the time of teaching) and precisely how to present them. Of course, it is much better if the examples and non-examples are videotaped before hand.

**Creating examples and non-examples.** The standard method for creating examples and non-examples is to identify the number of critical features of the procedure and create a non-example for each. For teaching purposes, then, demonstrations are conducted in pairs, one non-example and one example. Examples, as it turns out, are not really so necessary when the students already have had some exposure to the procedure. Most students already have been told about or have already seen what to do when someone is bothering them, or what to do when getting off the bus in the morning, or putting their things away, and so on. For these students, non-examples, if properly constructed, are likely to be enough to establish an observer repertoire. By contrast, when the procedure is new to students, as would be true for operations in math or procedures in laboratory science, it is important to include examples as well as non-examples when teaching the observer repertoire.

The most effective non-examples of a procedure or of a step in a procedure are quite close to how the procedure should be performed. Consider the following examples:

#### **Measuring with a measuring tape**

Hook tape to one end of object to be measured

“Hook it to one end”

Non-example: Show the tape hooked somewhere near the end

Pull tape container until tape is stretched to the other end

“Pull gently until you reach the other end.”

Non-example: Show the tape being stretched somewhere near the other end

Read the number of inches on the tape where the tape reaches the end of the object

“Read the number of inches.”

Non-example: Show the number just longer than the object being read

Allow the tape to recoil into the container

“Let the tape roll up.”

It is doubtful that a non-example is needed.

#### **Subtraction requiring borrowing**

Write the problem

Solve the one's column

If necessary, borrow from the ten's column

Solve the ten's column

If necessary, borrow from the hundred's column

Etc., until entire problem is solved

#### **Getting another student to stop pestering**

Tell the student to stop

“Tell the student to stop.”

Non-example: Show the student just telling the teacher

Tell the teacher

“Tell the teacher.”

Non-example: Show the student just telling the other student to stop

**Crossing the street where there is no traffic light**

Stop at the curb

“Stop.”

Non-example: Show stopping several feet before the curb.

Look both ways for oncoming cars that would hit you if you walked across the street

“Look.”

Non-example: Show looking down.

Wait for no cars that would hit you if you walked across the street

“Wait.”

Non-example: Show proceeding when cars are coming.

Walk across the street

“Cross.”

Non-example: Show dawdling.

**Non-examples and the steps in the procedure**. Non-examples should be developed with respect to the procedure per se, and not with respect to extraneous performance attributes. Consider the examples above:

**Measuring with a measuring tape**

Hook tape to one end of object to be measured

“Hook it to one end”

Acceptable Non-example: Show the tape hooked somewhere near the end

Unacceptable Non-example: Show bending of tape so that it creases

**Subtraction requiring borrowing**

Write the problem

Acceptable Non-example: Show borrowing from the 100's column instead of the ten's column

Unacceptable Non-example: Show subtracting the minuend from the subtrahend

**Getting another student to stop pestering**

Tell the student to stop

“Tell the student to stop.”

Acceptable Non-example: Show the student just telling the teacher

Unacceptable Non-example: Show the student saying “shut up!”

**Crossing the street where there is no traffic light**

Stop at the curb

“Stop.”

Acceptable Non-example: Show stopping several feet before the curb.

Unacceptable Non-example: Show the student flashing gang signs to a passing motorist

The procedure of measuring with a measuring tape ought not have non-examples showing mishandling of the tape. The procedure of subtraction with borrowing should not illustrate writing so hard that the pencil breaks. The procedure of getting another student to stop pestering should not illustrate getting the teacher's attention the wrong way. And, so on. Safe handling of equipment, writing with appropriate pressure, and getting the teacher's attention the right way might all be a good skills to teach, but they are not central to the procedures described here, so they should not be part of the set of non-examples. Once you have analyzed the procedure into those steps that are just right for the students you are teaching and you have defined the rules you will have them learn, you will know the features that need to have a non-example.

**VII. Conducting Demonstrations**

Demonstrations are to be conducted by the teacher so that students (a) have an opportunity to catch the teacher doing the wrong thing and (b) do not practice doing the procedure the wrong way. Notice non-examples always have to do with a rule that the students already have memorized, so it would be a good idea to start the session with a review of the rules appropriate to the procedure that will be demonstrated. Once it is assured

that all students can utter the rule on request, the teacher, and not the student, demonstrates an example or non-example of the rule.

The teacher must make a decision whether to demonstrate the whole procedure or just a part. When the procedure is short (e.g., what do you do when someone is bothering you), I recommend demonstrating the entire procedure each trial. When the procedure is long (e.g., measuring length with a tape measure), I recommend demonstrating just a part or two. Don't chance that students will have forgotten the error you will make in the non-example by the time the entire procedure is demonstrated.

**Measuring with a tape measure—a possible teaching scenerio/script**

“Everybody, watch me and see if I do it the right way.”

Hook the end of the tape on a part of the object somewhere near, but not at, the end, and begin pulling the tape.

“Did I do it the right way, yes or no. Everybody.”

“No”

“What’s the rule about hooking the tape?”

“*Hook it to one end.*”

“Didn’t I hook it to one end?”

“No”

“All right, let me try again.”

Hook the tape to one end and begin to pull it.

“Am I doing it the right way now?”

“Yes.”

“So, where am I supposed to hook the tape?”

“*Hook it to one end.*”

Continue pulling the tape and stop about 3/4’s of the length of the object.

“Am I doing it the right way, yes or no.” Everybody.

“No”

“What’s the rule about pulling the tape?”

“*Pull gently until you reach the other end.*”

“Oh, now I’ve got it.”

Etc.

Notice that, in teaching the observer repertoire, we present examples and non-examples, and we have the students verify the correctness of our demonstration again and again by a combination of responses that includes reciting the relevant rule. You might say that, in this manner, the rule begins to acquire meaning. Behaviorally speaking, the rule and the discriminations become interlocked. When the student sees someone performing the procedure, the student is increasingly likely to think about what occurred in terms of the rules. Moreover, when the student hears the rules spoken by someone else or by herself, the student is increasingly likely to imagine the performance. If this is to be a generalized tendency, we must program it. This means that the instructional team must be apprised of the progress students have made in learning the verbal and observer repertoires and be prepared to prompt relevant responding. The well-coached staff member would not ask the student to demonstrate the procedure, but might demonstrate the procedure (or a part) and ask the student what rule describes what was demonstrated. This stage of learning is a great time for teachers to point to students who know how to perform the procedure at the time that they are actually doing it to ask the more naïve peer for a critique, which might be prompted in the following way:

Tell me, did Jimmy do that procedure the right way?

“Yes.”

“What did he do that made it right?”



## VIII. Defining the performer repertoire and the performer repertoire curriculum

**Definition.** The performer repertoire consists of all the behaviors and their sequence necessary to accomplish the procedure. By “accomplish the procedure,” we mean to include that the procedure occurs at the right time, and is strengthened by the naturally occurring reinforcer.

**NB:** There is nothing in the definition of the performer repertoire that suggests the need for the verbal and/or observer repertoires or that the repertoires interlock in skilled performance. Yes, it’s true that someone can “do it” without being able to detect “what is done” and without being able to “describe what is done.” In fact, this state of being is a great deal more common than one might imagine and it is characteristic of all those areas in life that we refer to as “art.”

**Performer repertoire curriculum.** The performer repertoire curriculum depends on the complexity of the procedure. For procedures that are quite simple, like what to do when someone is bothering you, the performer repertoire curriculum can probably be considered as a single step. After all, the students will already be firm on the verbal repertoire and the observer repertoire, the procedure is about as short as a procedure gets, and the students being trained almost certainly have been exposed to a comparable procedure in the past. So, we would consider teaching the whole procedure at once.

Procedures that are more complicated, such as measuring with a measuring tape, will require a curriculum with more steps, particularly for low performing students. Here’s a spot where training verbal students is quite different from training non-verbal students. For the latter, the performer repertoire would be trained either as “forward chaining,” in which we would start training with the first step and then proceed to the second step and so forth, or as “backward chaining” in which we would begin training with the last step and then proceed to the second last step and so on. With verbal students, we’ve already trained the verbal repertoire and the observer repertoire, so all the steps are, in a sense, known. We can concentrate first on the hard parts. The hard part in measuring with a measuring tape is reading the right number from the tape. As mentioned before, a common error is to read the number just past the object being measured. It might, after all be closer to the edge of the object than the correct number. So, the first level of the performer repertoire curriculum for measuring with a measuring tape is reading the correct number from the tape. The second level, depending on the sophistication of the students, might be doing the entire procedure.

## IX. Teaching the performer repertoire

The performer repertoire is taught by permitting the students to actually do the procedure or a step or two of the procedure. This is the first time in procedure training that the students actually perform the procedure, but, remember, they already are firm on the verbal repertoire and they are already firm on the observer repertoire, so actually doing it will be easier for them than it would be had they not receive the previous training. Still, we want to make sure that students do not practice errors, so the teacher must observe closely and stop the performance as soon as an error occurs. Corrections should always be in the form of an indirect prompt of the rule that applies.

**Simulations, role-plays, and who will role-play.** Initial instruction of the performer repertoire is conducted as a simulation or role-play. That is, the naturally occurring antecedents and consequences are not present. It is the teacher’s prompt and the teacher’s instructional reinforcement that makes it go. This is a problem for generalization of the procedure to naturally occurring conditions. To help overcome this difficulty, the teacher must indirectly prompt the rules again and again.

This is the first time during the training of a procedure that the students will be performing in front of their peers, so it is very important that the teacher choose wisely who will do it first. Choose a student who is very likely to do it the right way, or, if the student makes an error, will take an error correction. If more than one student is very likely to do it the right way, choose the student who will command the greatest amount of attention from the other students. When the students observe another student doing it the right way, they are getting another demonstration and it may be one they are more likely to imitate than the teacher’s demonstration(s), which occurred during observer repertoire training.

**Instructing the role-player(s) and the observers.** Unlike teaching the verbal repertoire and the observer repertoire, where only one set of instructions is required for all students, teaching the performer repertoire requires one set of instructions for the student(s) who are doing the role-play and another set of instructions for the student(s) who are observing the role-play. For both, however, the instructions will be in terms of the verbal repertoire. The role-player has to do it and the observers have to watch to determine whether it was done correctly. For example, (assume that Jimmy is a student who is likely to perform the entire procedure correctly):

“Jimmy, I want you to show us how to measure with a measuring tape. Suzy and Mary, I want you to watch carefully to see that Jimmy does all the steps the right way. Let’s review: “What’s the first step”?

*“Hook it to one end”*

“What’s the second step”?

*“Pull gently until you reach the other end.”*

“What’s the third step”?

*“Read the number of inches.”*

“What’s the fourth step”?

*“Let the tape roll up.”*

“Great, you’ve got it. O.k., Jimmy, let’s see you do it.”

What if Jimmy makes an error? Stop the role-play and ask the whole group about the rule for the step. Have him start the procedure again.

**Teaching self-management during the role play.** The role player can be taught the beginnings of self-management during the role-play if the teacher has the student utter the rule concerning the next step before actually doing the step. This may make actually doing the procedure a bit awkward, and if it’s too awkward one can skip it; however, what will happen over a number of trials is that the verbalization will become abbreviated and covert.

## **X. Transferring or generalizing procedures**

Role-plays are simulations, so naturally-occurring antecedents and consequences are only present by approximation. That’s a problem, because, in order to promote generalization, it is essential that the procedure is performed in the presence of at least some of the naturally-occurring antecedents and consequences. How one accomplishes the transfer depends on the type of procedure.

**Transferring classroom and school procedures.** These procedures are the easiest to obtain generalization because they get to be performed again and again throughout the day. However, that is only if the entire instructional team responds appropriately. Prompts need to be carefully identified and instructional reinforcers need to be associated with the naturally-occurring reinforcers. A big advantage in transferring classroom and school procedures is that they can be practiced just before they are expected to occur naturally. Putting away materials at the end of class can be practiced just before class ends. Starting the next class can be practiced at the end of the preceding class. In this way, the desired performance can be primed. As is true for all procedures taught to verbal students, prompting should always be by way of questioning the student about what is to be done and reinforcement should often refer to what was done.

**Transferring procedures to naturally occurring settings outside of school.** These are fairly difficult generalizations to make because the number of irrelevant stimuli in the natural setting, like a store, can reduce generalization, and it is difficult to overcome this problem by increasing the frequency of store visits because that consumes too much time. Two strategies in addition to those already suggested may facilitate generalization.

First, difficult steps must be taught to fluency under highly distracting conditions. Consider the student who has acquired the “next dollar rule.” If performance of this money changing procedure is not brought to fluency under highly distracting conditions, the student is not likely ever to make a purchase in a busy store. So, not only must we bring the procedure to fluency, but we must continue the fluency training while the student is confronted with many types of highly distracting stimuli.

Second, training under conditions more closely resembling actual store conditions is necessary. This might be accomplished through video modeling.

**Transferring procedures to naturally-occurring social settings.** Teaching students to be nice to one another in simulation is fairly easy. Teaching to promote generalization to social situations outside of the simulations is often quite difficult. The reason is that the partner in the natural setting often remains the same lousy partner s/he was prior to training because little time was spent teaching the partner how to be a “good” partner. If a student tells her friend, who is teasing her, “stop,” most adolescent “friends” I know will not stop. They are more likely to exaggerate the teasing instead of stopping it. The “good” partner, on the other hand, will have been taught to stop teasing when told to “stop.” This example makes it plain that, in the case of social interaction procedures, there are reciprocal procedures to teach. Failure to teach one of them will restrict the generalization of the one taught.

An additional problem exists in the case of social interaction procedures. To the extent that these procedures often do not occur in the presence of the teacher, quality prompting and instructional reinforcement are missing. One way to counter this problem is to have the students recite the rules for and, perhaps, role play the desired interaction before being sent out of the presence of the teacher. The teacher might also have the students reflect on the interaction they just had by querying them on the rules of the social interaction procedure.

**Ensuring against prompt dependency in “real-life” settings.** The long-term success of the transfer or generalization training will depend on the extent to which the teacher can stop prompting the students. Persistent prompting must be seen as a teaching problem, not a student problem. One way to stop prompting and ensure student success is built into the training prescribed in this module. Fading is facilitated to the extent that teachers emphasize the question prompt. Once the question prompt is a reliable feature of the teaching environment, fading of this prompt will need to occur. Time fading is the method of choice. Teachers must fade the amount of time between the question prompt and the actual performance, a practice that is likely to be successful for nearly all of the verbal students served in TIEE schools.