

# Autism Practice Brief

VCU Autism Center for Excellence (VCU-ACE)



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## Autism Q&A: Designing Instructional Programs for Skill Acquisition

There are a number of things that the teacher should consider when developing an instructional program to teach a new skill. First, the teacher must decide what to teach by evaluating the student and setting an instructional objective. Second, the teacher needs to identify the instructional or natural cues that signal the student to perform the skill. Third, behavior change procedures must be selected and can include reinforcement procedures, prompting, and compensatory strategies. Finally, the teacher must decide how she will know that the student has learned the targeted task by creating a data collection system. All of these components make up the instructional program that then can be used by the teacher or paraprofessional. The figure outlines the Instructional Model.



program and instruction. However, there are a series of steps that comprise the instructional process every educator should understand and follow when providing instruction to any student with autism.

Instructional Cue → Prompt → Student Response → Reinforcement

**Question: What is an instructional cue?**

**ANSWER**

An instructional cue is the direction or antecedent that signals the student what to do. Examples include asking, "Who are the characters in the story?" "What is 5 x 8?" or showing a student a picture and asking, "What do you see?" The instructional cue can be contrived. For example, when teaching money skills, the teacher may hand the student a coin and ask, "How much money do you have?" The cue can also be a natural cue.

**Question: How does the teacher determine the skill to target?**

**ANSWER**

The teacher begins by first evaluating the student's ability to perform the targeted skill. This data provides a "baseline" evaluation that can be used to compare the student's progress over time. During the initial evaluation, the student is not given any prompts or reinforcement to complete the skill. Essentially, the teacher wants to evaluate what the student can do independently. Once the assessment has been completed, a training objective can be written that specifies the outcome to be achieved. The wording of the objective includes the observable skill, the conditions under which the skill occurs, and the criteria that will be used to evaluate the student's performance. Each skill to be taught should have a corresponding objective. Finally, the objective must include the criterion that can be used to evaluate the student's performance. In the following example, the criterion indicates that the student must perform all the steps in a task analysis for three consecutive probe trials with 100% accuracy.

**Conditions under which the skill will occur:** Given a tray in the cafeteria line.

**Observable skill:** Mark will walk down the line, select, and place a lunch entree, drink, and dessert on his tray.

**Criteria for evaluating student performance:** ....with 100% accuracy according to the steps in the task analysis for three consecutive probe trials.

**Question: What are natural cues and why is it important to include them in an instructional program.**

**ANSWER**

A natural cue represents some feature of the classroom setting or part of an activity that signals the student what to do. Typically, a natural cue is one that the student can see, hear, touch/feel, or smell and has not been changed or added to by the teacher. Examples may include the ringing of a cell phone, flashing light on a toy, announcements over a loud speaker, and the placement or location of school supplies or other materials. When a natural cue is present or occurs during the student's school day, the student may attend to the cue and respond correctly, not attend to the cue at all, or respond incorrectly. For example, when a teacher places a worksheet on the student's desk, the placement of the worksheet should signal the student to begin. If, the student waits to be told to pick up his pencil, he or she is not responding to the natural cue.

Waiting for verbal instructions to complete a task or activity may result in the student being dependent on the teacher. This is sometimes referred to as "prompt dependence," which can limit access to activities without the supervision or support of an instructor. Teaching students to respond to the cues in the environment can address this concern and potentially increase inclusion in many different settings. Initially, the student may need to be prompted to respond to the natural cues. These cues can be gradually faded so that eventually the student responds only to the natural cue without additional support from the teacher.

**Question: How does the teacher implement instruction?**

**ANSWER**

Implementing instruction with a student requires individualization. Each student with autism is unique requiring his or her own

**Question: What are prompts and how should they be used during instruction?**

### ANSWER

There are different types of prompts such as verbal, gesture, model, and physical prompts. How and when a teacher uses prompts depends on the student's level of independence in completing a specific skill. Verbal prompts can be full verbal prompts or partial. A full verbal prompt provides detailed instruction as to exactly what the student should do (e.g., "Turn to the next page in the book."). A partial verbal prompt provides information that is general such as saying, "What do you do now?" Gesture prompts include such things as pointing, looking at, motioning toward, or moving closer to items used in the task. If the teacher is using a gesture prompt for instruction, she might point to the page in the book, look at the book, or touch the page to prompt the student to turn the page.

The last two types of prompts are model and physical. When using a model prompt, the teacher demonstrates the behavior that she wants the student to do. For instance, if the teacher wants the student to stand, she stands up. Typically, model prompts are effective if the student demonstrates the ability to imitate behaviors that are shown to him or her. Physical prompts are the most intrusive types of prompts that can be used for instruction. The teacher can use a full physical or partial physical prompt. Full physical prompts, sometimes referred to as "hand over hand," are the most intrusive of all the prompts. A partial physical prompt usually means that the teacher is gently guiding the student such as touching his or her elbow rather than moving the student's hands to complete the activity.

Any of these prompts can be used alone or paired together. For instance, the teacher might verbally say "Turn the page of the book" while pointing to the book. The teacher is using a verbal paired with a gesture prompt simultaneously in this example. Or, the teacher might say "Stand up" as she stands up. She is using a verbal prompt paired with a model prompt to get the student to stand up. Identifying which prompt(s) to use and how to pair them together should be explained in the instructional program.

**Question: How does a teacher determine which reinforcement procedures to use for an instructional program?**

### ANSWER

The purpose of positive reinforcement is to assist students with autism in acquiring new skills and maintaining them over time. So, it is important for the teacher to use reinforcement during instruction. The student receives reinforcement contingent on the occurrence of a specific behavior. The anticipated outcome is that his or her skill performance will increase or improve in anticipation of receiving the reinforcer. When and how often the student receives the reinforcer during instruction is an important consideration. These decisions are made based on the skill level of the student. Initially, the student may receive reinforcement more frequently to promote learning. Once learning occurs, the amount and frequency of the reinforcer can be faded. A more detailed answer to this question is not possible within the scope of this Q and A. VCU-ACE has developed several

resources on reinforcement that can be found online at: [<http://www.vcuautismcenter.org/resources/factsheets.cfm>].

**Question: How does the teacher determine if a student has learned a targeted skill?**

### ANSWER

After instruction begins, the teacher should collect data on the student's independent performance without prompts or reinforcement provided. This is referred to as "probe" data. The probe data is recorded and then instruction on the task can be provided. Data can also be collected during the actual instructional process and the teacher records the type of prompts and assistance that is needed for the student to perform the skill. Data can be collected in a number of different ways such as using a single or multiple opportunity probe procedure. When teaching, skills will be broken down into steps or small teachable parts through the creation of a task analysis. The task analysis consists of observable behaviors with each step in the task analysis representing one discrete "behavior." The teacher then records if the student successfully or unsuccessfully completes the step in the task analysis. Some skills to be taught may have only one discrete step such as answering "yes" or "no" to a question. In those instances, a task analysis is not needed for data collection.

### Summary

This Q and A has provided basic information on how to develop an instructional program. Teaching students with autism requires that instruction occurs systematically in order to facilitate skill acquisition. Applying procedures systematically or the same way each time instruction occurs can help the student learn the task quickly. Systematic instruction also can prevent students from learning error patterns of performance. Please visit the VCU-ACE website for additional fact sheets on each component of developing and implementing an instructional program for students with autism.

### For More Information

- Alberto, P.A., Troutman, A.C. (2005). Applied behavior analysis for teachers. Upper Saddle River, New Jersey: Prentice-Hall
- Inge, K. J., Engstrom, J., and Palko, S. (2011) Autism Q and A: Facilitating skill acquisition using positive reinforcement. Richmond, VA: Virginia Commonwealth University's Autism Center for Excellence.
- Available online: [http://www.vcuautismcenter.org/resources/factsheets\\_skill.cfm](http://www.vcuautismcenter.org/resources/factsheets_skill.cfm)

### Contributors for this issue include:

**Katherine Inge, Ph.D., O.T.R., Dawn Hendricks, Ph.D., and Susan Palko, M.Ed. -- VCU-RRTC**

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