Behavioral Interventions

Chaining

Chaining is a teaching technique that consists of breaking a task down into small steps and then teaching each specific step within the sequence by itself. This technique is helpful when students need to learn a routine task that is repetitive. For example, the student may need to learn all of the steps in the process of using the bathroom, putting on a coat or completing a work task.

There are two types of chaining techniques: "forward chaining" and "backward chaining." The forward chaining technique moves a student from the first part of the task to the end. The backward chaining technique moves a student from the last part of the task to the beginning. The decision to use either a forward chaining" or backward chaining" is dependent on the student and the task. An analysis of the task and the students ability level will help the teacher decide which chaining procedure is the best method of teaching the task.

The chaining technique is part of a larger concept of behavior intervention called applied behavioral analysis. The student is taught a task through the use of the behavioral technique of chaining and then reinforced for completion (click here to see other behavior interventions). In order for the chaining technique to be used appropriately, the task that the student is unable to complete must first be broken down into small steps. The process of breaking those steps down is called "task analysis."

FORWARD CHAINING

Forward chaining breaks a task down into understandable and manageable steps. Each step in the sequence is then taught from the beginning to the end. After the target task has been analyzed,

broken into steps, and written into a plan, the teacher begins to teach the student the first step in the chain. When the first step is learned, the teacher moves to the second step. The second step is taught by adding it to the first step. The student is then learning the second step in the routine and attaching it to the first step. When the student is able to demonstrate the first and second steps in the chain, the third step is taught in conjunction with the first two steps. In other words each time a new step is taught the others are completed first and then the new step is added. Each step must be mastered before the next step is added. If a student is unable to complete a step in the sequence, the teacher must analyze that step to see what changes might need to be made in the chaining process.

Example:

Paul is not able to dress himself independently. However, he is able to undress himself, only needing help with his buttons. A school teacher suggested that a forward chaining program would be an appropriate approach to teach Paul to dress himself. A task analysis has been completed to gain information about the steps Paul will need to learn in order to dress independently. The task analysis also provides information about what skills Paul already possesses, but does not demonstrate during the dressing process. Paul's parents would like the priority to be that Paul learns to put on his pants independently first and then the other items of clothing.

In the morning when it is time for Paul to get dressed, he is assisted with putting on his underwear and socks. When the step occurs for Paul to begin putting on his pants, he is prompted to hold the pants in his hands and place his foot into one pant leg. As Paul places his foot and leg

into the pant leg, he is reinforced and the adult staff completes the process for him. As Paul independently begins to complete the first step, he is prompted to put his other leg in next. As the chaining process continues, Paul is handed the pants, he holds them independently, puts one leg in and then the other, stands up, pulls up the pants, pulls them together at the top, fastens the fastener and to complete the chain, pulls up the zipper.

The next step would be to teach Paul to put on his socks and then his shirt and shoes. Finally, he would learn to tie his shoes. Then the dressing process would be complete. Since Paul does not know how to button his shirt that could be another chaining process as could tying his shoes.

Forward chaining can also be used to teach academic and behavioral skills. An example, of a complex academic chain might involve learning to count, demonstrate one-to-one concepts, write the numbers and then to perform simple addition problems.

STEPS IN FORWARD CHAINING

1. Identify the target behavior

2. Task analyze the behavior to determine each individual step

3. Teach and reinforce the initial step in the skill

4. Collect data on the acquisition of the skill and analyze it for mastery

5. When the first step is mastered, teach and reinforce the second step in conjunction with the first step

6. As each successive step is mastered, add the next step in the skill series until the student is able to demonstrate the entire skill without adult support

BACKWORD CHAINING

The backward chaining technique involves the same process as forward chaining, but the teaching process begins at the end of the sequence and moves to the beginning. Backward chaining is used when a student can be taught a task easier from the last step of the task than the first. The student is provided with adult assistance throughout the process until the last step. The student is encouraged to complete the last step alone. If prompts are provided, they are faded as soon as possible so that the last step is independent. When the lasts step is mastered, the student is provided help until she is able to perform the step before the last one. Each step is mastered prior to the final step. The student is completing more and more ending steps independently until she is able to complete without adult assistance.

Example:

Paul is now able to put on all of his clothes independently. He can even put on his shoes, but he is unable to tie them and becomes very frustrated when he attempts the first step. A school teacher suggested a backward chaining technique for Paul to learn to tie his shoes. Paul is reinforced following the dressing task and also when he puts on his shoes. The adult ties the first shoe for Paul except for pulling the laces tight at the end of the sequence. This process is repeated for the other shoe. Paul is reinforced for pulling the laces tight on both shoes. He is not required to do any other step but that one. When Paul demonstrates mastery of that step, he is

required to assist with pushing the loop through the hole. Each succeeding step of the shoe-tying sequence would be taught based on completion of the preceding step

The next step would be to teach Paul to put on his socks and then his shirt and shoes. Finally, he would learn to tie his shoes. Then the dressing process would be complete. Since Paul does not know how to button his shirt that could be another chaining process as could tying his shoes.

The shoe-tying task must be analyzed to determine each step in the sequence. If Paul is unable to move from one step to another, the sequence may have to be broken down into even smaller steps until he can complete the sequence successfully.

STEPS IN BACKWARD CHAINING

1. Identify the target behavior

2. Task analyze the behavior to determine each individual step

3. Teach and reinforce the last identified step in the skill

4. Collect data on acquisition of the skill and analyze it for mastery

5. When the final step is mastered, teach and reinforce the next-to-last step (i.e., or the step before the last step)

6. As each successive step is mastered, add the previous step in the skill series until the student is able to demonstrate the entire skill without adult support

ADDITIONAL AREAS OF IMPORTANCE

In order to implement a successful chaining program the task must be broken down into the smallest steps necessary for the student to learn and master. Students may demonstrate some steps of the chain. That allows the teacher to chain steps together faster; however, in designing and implementing a chaining program the student must complete all the steps in the correct order. Steps may be combined, but should not be eliminated unless they are not necessary to the completed task.

Quiz

1. What is forward chaining?

   ◯ Making a chain for a student from paper
   ◯ Teaching a task from the beginning to the end
   ◯ Teaching a task in small interdependent steps
   ◯ Both b and c

2. When would a chaining program be appropriate?

   ◯ When teaching counting
   ◯ When teaching dressing skills
   ◯ When teaching stuffing envelopes
   ◯ All of the above

3. Can steps in a program be done with adult assistance?

   ◯ Yes
   ◯ No

4. It is important to make sure each step in the task is written into the program.

   ◯ True
   ◯ False

References

Alberto, P., & Troutman, A. (1999). Applied behavior analysis for teachers. Columbus, OH: Prentice Hall.

Foxx, R. (1982). Increasing behaviors of persons with severe retardation and autism. Champaign, IL: Research Press

Rogers, S. (1999). Intervention for young children with autism: From research to practice. Infants and Young Children, 12(2), 1-16.