Assistive Technology

Associate Editor's Column

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The Application of ABA to Technology: The Discrete Trial Trainer

Based on the Discrete Trial (DT) methodology in Applied Behavior Analysis, Karl Smith originally developed the DT Trainer (2000) to target students, ages 2 to 6 years with autism and other learning and/or retention disorders. Its use has now been expanded to children and adults of all ages who require highly structured, configurable, motivating, and repetitious teaching. The DT Trainer is a software tool and behavioral teaching method which breaks down the learning of a task into small steps, giving the student a very high chance of success. Students are motivated to succeed with this program through ample praise statements and other on-screen reinforcers. Data are gathered on students' trial responses and a variety of reporting formats are available to capture these responses; therefore, a data-drive approach to instruction may occur. Trainers may include teachers, therapists, and parents. The DT trainer is appropriate for classroom, clinical, or at home use.

Karl Smith (2000) began his development of the DT Trainer because he has a son with autism and he wanted "to improve the odds that [his] son would be OK" (p. 1). Smith identified several issues that affected his son's learning. He targeted these areas in his software development.

1. The child needs a lot of repetition to really know something well.
2. The child gets tired of working with people all of the time.
3. Reinforcers have to be kept fresh, numerous, and motivating (Smith, 2001).

Smith does not suggest that software alone will address all of a student's needs. It should be considered "an additional tool in our arsenal of tools and methods that are required in our full frontal assault on a child's autism or other learning problems" (p. 2). His goal is that the DT Trainer will meet 10-30% of a child's educational needs during an intensive program.

It is necessary to explain a few key terms before describing more about this program. In the DT Trainer, *prompts* are the visual, on-screen clues of position or size. The *target item* is the correct item choice for a particular trial. *Discriminative stimuli* (DS) are the commands telling the student what to do. In the DT Trainer, the discriminative stimuli are verbal, in text, or both. *Familiar and unfamiliar distracters* are used to provide the student with an incorrect alternative to the target item.

Three modes for item presentation are used in the DT Trainer. Students begin the program with an intense introduction. This intensity gradually fades to a randomized period and then moves into a period of maintenance. In the *train mode*, high intensity, repetitive drilling is used as the student progresses through the levels of difficulty, number of distracting images, and prompt levels. The *random mode* is less intensive; items are presented randomly and tend to be more advanced than in the train mode. These items tend to be familiar but not completely learned. Advancement through the random mode would equal basic knowledge of the content area. In contrast, the *maintenance mode* is lower in intensity to allow for the continuation of training. Items are generally known and presented infrequently. Progression through the maintenance mode indicates a student's knowledge retention.

In the item trial sequence, an image is shown, the DS or command is given, and the student responds. If the student gives the correct response, praise/reinforcement is given, and a new trial is presented. If an incorrect response is given, no praise/reinforcement is given, and a new trial is then presented. If no response is given at all, the program goes into wait mode, and finally, a new trial is presented.

DT Trainer programs cover three functions: (a) labels, (b) sounds, and (c) questions. In the first category, labels, teaching involves the facilitation of matching simple object labels to functional information associated with images. These labels include (a) object sets (e.g., colors, shapes, numbers, and letters), (b) words, (c) sounds, and (d) functional items (i.e., wh questions). For example, some specific items included within the category of objects are ball, block, crayon, teddy bear, doll, book, cup, bowl, plate, spoon, fork, knife, shoe, baby, bird, bottle, car, cat, dog, house, tree, water, banana, pillow, blanket, and towel.

In the sounds section, sounds and pictures of items are associated. For example, the sound of a dog barking, an alarm clock ringing, a baby crying, and/or a telephone ringing must be associated with the correct picture.

In the questions function, students are asked to identify how an item and a function are associated. For example, the question "What do you do with X?" might be asked. Specific examples include (a) cut with scissors, (b) eat with a spoon, or (c) write with a pencil.

Once installed, the program will run automatically through the normal training sequence. It will train the student in content areas and program modes for the number of trials specified by the teacher. Trials may also be designated to continue until success has been reached. Each time the student begins work on the DT Trainer, the session will continue where the last session left off.

Reinforcers act as rewards in the DT Trainer. After one or more correct responses, specified by the teacher, a skill building activity is presented. These skill builders appear in a developmental sequence, progressing from level 1 through level 3 as designated by the trainer. The student may also pick his or her own. The reinforcer categories are activities (e.g., arts and graphics, basic cause/effect, basic problem-solving, controls, eye/hand, games, intermediate cause/effect, music), non-interactive (e.g., high-stimulation, math graphics, tunnels), sounds (e.g., children's songs), and videos (e.g., animations, movies).

A profile is created for each student who will be using the DT Trainer. Options include (a) mouse or touch screen, (b) session duration, (c) number of no responses before wait mode, (d) blockage of early responses, and (e) distracter prompt settings. Advancement/fallback criteria can be set in the student's training profile. This allows the user to select the number of correct and incorrect trials accepted before moving to the next level. Levels include low-low, low, low-medium, high-medium, low-high, high, and high-high. The reinforcement schedule may also be determined as well as the trial timeout.

Weekly and trend reports may be printed from DT Trainer. Weekly reports show the number of trials given to a student, and how many of those trials were each in the train, random, or maintenance modes. Response time, distracters, previous reinforcers, and session times are also reported. Trend reports show the student's progress over time. Ninety to 100% correct would indicate that training is too easy or the student may already know the active programs. If the student is experiencing a good level of success without the trials being too easy, he or she would most likely score in the 80-89% range. At 70-79%, the training might be too challenging for the student. Not enough success might hamper the student's progress and interest. If the student's score is below 70%, the training is set too high. A lower profile may be needed or the train mode step may need to be lowered.

Several new enhancements are planned for the DT Trainer in response to customer requests. Along with the consideration of additional program content, more reinforcers are being developed, a female speaking voice will be added, and additional reporting mechanisms will soon be available. For more information on the DT Trainer, visit *http://www.DTTrainer.com*, or contact Accelerations Educational Software at (803) 791-7507. The program developer can be reached at *ksmith@DTTrainer.com*.

References

Discrete trial trainer [Computer software]. (2000). Accelerations Educational Software.

Smith, K. (2001, January). *The DT Trainer: A computer-based discrete trial training program.* Presentation at the 18th Annual International Technology and Media Division Conference of the Council for Exceptional Children, Albuquerque, NM.

Smith, K. (2000). *Discrete trial trainer.* Retrieved February 2, 2001 from the World Wide Web: *http://www.DTTrainer.com*

If you have an assistive technology topic or product that you would like to see covered or if you are interested in being a guest writer, please send your comments to:

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