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ABSTRACT

The educational program of a student with autism most easily and beneficially begins with manipulation of objects. Short periods of time should be allotted to each activity to hold attention and ensure success. Partial participation and an individualized reinforcement schedule are important elements in the instructional design. Assistance in completing activities should be faded gradually. Skills important to develop in preschool and school-aged children include matching, fine motor, and concept building. Goals, objectives, and sample activities for teaching these skills are presented. (JDD)

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FUNCTIONAL PROGRAMMING FOR PEOPLE WITH AUTISM: A Series . . .

FUNCTIONAL SCHOOL ACTIVITIES I

by Nancy Dalrymple, 1980

Revised by Barbara Porco, 1989

Indiana Resource Center for Autism

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INTRODUCTION

When a student with autism has few specific "school" or "pre-academic" skills, the problem of where to begin seems enormous. If the student doesn't sit, doesn't look, and has various interfering behaviors, the question, "Where should I begin?" is sometimes asked.

Looking at a person, giving an object to a person, pointing, attending to a task for even a minute, and following simple directions is difficult for many young children with severe handicaps. Therefore, it is often easiest and most beneficial to start a student's educational program with manipulation of objects. A clear definition of expectations and directions must be communicated to the student through positioning of hands and body. Each small step needs to be executed in exactly the same way with a clear definition of what "finished" means.

It is recommended that students be expected to work in short lessons of 10 to 20 minutes at first with a variety of activities within each lesson. Skills must be worked on daily. Planning short periods of time per activity (two or three minutes) is the best way to hold attention and ensure success. Partial participation (allowing the student to participate in an activity or on a task even if s/he is unable to perform independently or for the entire time) allows success on a step by step basis.

The reinforcement schedule must be individually planned. Some students will need to be reinforced after every correct response, even if assisted, in order to learn what is expected. For some students, the reinforcement should follow an entire sequence since reinforcing each response breaks attention to the activity. Moving reinforcement to completion of the activity is a good way to teach the concept of "finished."

Reinforcement may be a "yes" with a smile and/or a pat, may be clapping hands accompanied by saying, "good putting in," or may be a toy such as a busy box, zither, or musical ball or box. Food reinforcers such as cereal, raisins, cheese

crackers, or pretzel sticks may be paired with social reinforcers initially. Teachers should use what works well and conveys the message to the student that s/he has succeeded in doing the job.

The activity should be designed so that success is going to be possible. The student may be assisted through the task numerous times to "learn how it feels" and to coordinate all his/her perceptions. The assistance must be faded gradually to touch cues, then to close proximity of hands and body, to verbal cues, to gradual removal of adult presence. Fading must be built in as lessons are planned; otherwise, the student may become dependent on cues when the goal for the student is independence. As a student becomes independent or at least competent in a task, pair the student with a peer, with the teacher facilitating social interaction and turn taking around the task (object) at which the student is already successful. Gradually expand the size of the group and the amount of time spent in a group setting. Continue to choose activities which are interesting and successful for the student.

Following "work time," the student needs time for doing what s/he wants while the teacher is working with other students. At first, the student may need to be taught how to play with his or her special toys in a designated area during free time. Structured free time works best with the amount of time spent increasing as the student learns expectations. It is all right for the free time play to be unusual, e.g., flipping magazine pages as the child takes a break and while the teacher meets other classroom requirements.

The areas covered in this section might all be worked on at the same time in various lessons at various levels. The student may move faster in one area than another. In some cases, it may be that until the student can perform some basic gross motor movements, explore the environment through sensory experiences, and respond to stimulus cues, s/he cannot attend to readiness skills. However, many preschool

and school-aged children with autism are ready to progress with skill development in the areas of matching, fine motor, and concept building.

MATCHING SKILLS

When a student does not attend, has many interfering behaviors, and few skills, teaching the student to utilize his visual-motor abilities to respond to a highly structured lesson is an excellent place to begin. Matching requires a student to use tactile, visual, and motor responses to process information. Being thus occupied the student learns to control interfering behaviors. Attending skills can be increased in a planned way.

The long-range goal is to increase the amount of time the student can work independently, a crucial functional skill for later learning. For students who are not yet at a conceptual level to understand matching, begin with teaching the "put in" response. It is often easier to teach students with autism to "put in" rather than "give" or "point to." Use the student's interests even if self-stimulatory, e.g., dropping coins into a tin can to hear the noise. Place the container to the student's dominant side with the object(s) in front. Demonstrate while saying "put in." Direct the child to "put in" with words and gestures to direct the student to "put in." Reinforce if s/he does. If not, physically assist as minimally as possible and reinforce.

As this lesson is practiced, plan many, varied applications of the skill during the day at home and at school, e.g., putting gloves in a box with his/her name on it upon arriving at school or home; putting dirty clothes in th hamper; toys in the toy box; paper in the wastebasket; cups in the cupboard; dishes in the sink; etc. When the direction "put in" is being followed consistently, move to matching.

Matching and sorting skills relate to many other skills needed in future daily living and job settings including classification and categorizing. Apply these skills as they are

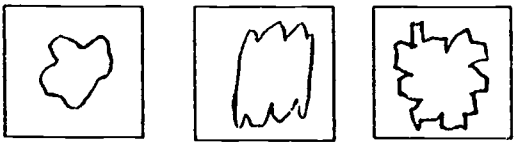
taught to personal care, community life, play, math, readiness, and practical classroom skills and activities. The long-range goal is increasing independence. Specific objectives which relate to matching and sorting should be worked on simultaneously throughout the day to optimize generalization of skills.

General order of matching skills follows: Vary materials and position of materials within each objective and teach "put on" as well as "put in." If the student has trouble looking down, change the plane of the matching activity so that s/he looks more directly at it by using an easel or prop underneath.

1. Match two, three, and four very different objects of the same color (three in a set) to a sample. It may be necessary to hand the student one at a time at first.

Example: blue socks, mittens, balls, matched into a compartmentalized box. Wooden letter boxes with wooden dividers are easily made and durable. Cardboard boxes or baskets work also.

2. Match two, three, and four materials scraps to a sample. Scraps are glued on heavy cards with a piece of loose material to match. Example:



Then match items of clothing of different textures and colors.

3. Match two, three, and four of the same objects but different colors (three in a set) to a sample.

Example: cups to saucers; socks in bins; art paper into slots or drawers by color.

4. Match two, three, and four pictures to a sample.

Example: separate cards placed in a trap or on a non-skid surface, with another identical card to "put on." These should be pictures of familiar items and be used during the day, e.g., at snack, match a picture of a cracker to the real cracker or to the box.

5. Match two, three, and four objects all the same color to a sample (three in a set).

Example: White plastic tableware; red small toys; or white clothes like socks, underwear, and shirts.

Application to home includes: matching, then sorting silverware, socks, dishes, canned goods, clothing etc.

6. Gradually increase the number to 6, 9, and 12 with three or four per set as in steps one to five. Increase the number that can be handled independently by using a box lid or tray to hold the items to be matched so they stay in place. Dycem padding helps hold objects and cards as in Lotto games with 4, 6, and 8 pictures. Use the acquired skill to then teach social skills, e.g., playing a Lotto game with a peer.

7. When the student can match objects independently, s/he will sort the objects into the correct number of spaces available. Use sets of three or four, increasing the numbers and variety.

Example: pop bottles into slotted crates by type, toys in slots or shelves by type, musical instruments in separate containers.

8. Match 4, 6, and 9 letters, then numbers, and words to samples. Use sorting boxes which are shallow and use practical applications, e.g., sorting mail by letter, then by name, then putting in staff mailboxes in the school office.

9. Sort by attributes which child has learned to match.

10. Match two, three, and four different objects which have multi-colors within each category. Example: clothing, small toys, legos or blocks, labels of multi-colors.

11. Match and sort by increasingly similar attributes and combinations.

Suggested Goals and Objectives:

Goal: _____ will work on assigned matching/sorting tasks:

- with assistance
- with minimal cuing
- independently for increasing amounts of time (specify)

Objectives:

1. ____ will put materials in containers.
2. ____ will put in as appropriate throughout the day: coat in box, cup in sink, toothbrush in holder, etc.
3. ____ will match two, three, and four colors using varied materials.

Criterion desired, the time allotted to each activity, and the behavior to be shaped must be individualized.

General Procedure:

The student is seated at a table with the teacher to his/her dominant side. For some students it may be necessary to sit directly behind, allowing the teacher to assist and to help control excess movements. When the student is successful, move to one side, then across the table. Next, work with the student at a table alongside another student, both doing individual tasks. Then include some interactive tasks, e.g., a color matching game or activity. Gradually add students to form a small group for at least part of a lesson.

Sample Lesson-Objectives and Activities:

1. ____ will independently do activities requiring matching objects of four different colors (has mastered preceding step). Direct the student to match cups to saucers, napkins and plates to placemats. Reinforce with praise.

Direct the student to sort colored art paper into four stacks. Then direct to put it away in the correct color-coded drawers. Leaving his seat to do this activity may be reinforcing in itself. Time: 5 minutes.

2. ____ will match pictures to the correct grocery container (with minimal cues). Set out 6 to 10 empty food containers. Have pictures of the product shown on the container. Direct the student to put the matching picture on the container. Cue to "look" as necessary. Reinforce by having him match a picture to a real food item, then s/he eats the food. Time: 5 minutes.

3. ____ will match letters, two of each in nine piles (or in a sorting box) independently. Verbal reinforcement. Time: 4 minutes.

4. ____ will match words of two to four letters, two of each with a choice of six (minimal cues if needed). Putting the cards away in "baggies" is often reinforcing. Time: 4 minutes.

5. ____ will match names of classmates to their pictures on the class chore chart (velcro chart). Use minimal cues as needed. Time: 4 minutes.

This is a 22 minute lesson to be followed by a reinforcer toy or activity on his/her choice board. As progress is made, expectations should be increased to enable the student to handle more items, a longer work period, and more independence. More of the activities should be moved from practice to functional classroom use.

The objectives for extraneous or self stimulatory behavior should be clear and consistent, e.g., "pick up object, then put in," or "put in objects, then flip toy plane;" "hand in lap;" "match three more, then get up." Individual behavior plans are as essential as individually task-analyzed lesson plans.

FINE MOTOR

This is an extremely broad area which will only be discussed briefly. Many students with autism have serious perceptual-motor problems. They need much experience moving

through activities to learn to integrate all their perceptions. A careful analysis of the activity must be made with each student's particular needs in mind. Adaptations of the task analysis must be made for each student. Careful observation is necessary to know why a student is succeeding or failing. Physically moving a student through an activity may aid one child, cause resistance in another, and make a third student lose the desire to perform alone.

Some students with autism have excellent fine motor skills, particularly in manipulation of objects where there is a self-correcting design, such as puzzles. They also enjoy ordering or lining up items. This doesn't always mean the visual-motor skills necessary to print or write will be good.

Consider including computer skills training as early as possible to teach keyboard, cause and effect, and simple concepts. Beginning at a readiness level helps build strong skills needed in the student's future.

Fine Motor Objectives and Activities Within Categories

Many students with autism have conditioned responses to manipulation of objects. They may spin, flip, throw, or bite anything in their hands, or may have specific behaviors for specific items. Anything with a string attached may be twisted, lids or round items may be spun, paste and paint may be eaten, and blocks thrown.

Relating objects to specific uses, moving them effectively in space, and in relation to their own bodies must be taught. Then generalizing use and applying learned skills must be planned and implemented.

A. Manipulation of Objects:

1. Use objects and instruments as demonstrated, directed, or intended. (Examples: hammer, pegs, squeeze scissors, crayon, paint brush).

2. Touch and manipulate an increasing variety of textures and objects.
3. Pick up and release objects for a purpose. (Examples: ball in bin, blocks on shelf, milk cartons in carriers, paper in trash.)
4. Complete tasks using two hands. (Examples: carrying; pushing; squeezing, rolling, pounding playdough; unscrewing jars lids; unlocking padlocks; pulling apart and putting together poppet beads; stirring and holding; buttoning; cutting with squeeze scissors; pulling pants up and down).
5. Use a pincer grasp to squeeze, pick up or place objects. (Examples: picking up small items like raisins or paper clips with fingers, and putting in; zipping; winding up toys).
6. Place objects in designated spaces. (Examples: shapes in shape-sorter; pencils in supply boxes; books on shelf; toothbrush in holder; cookies and crackers on a plate; milk in refrigerator. Do increasingly difficult puzzles such as:

- 2 to 5 piece separate puzzle pieces with tray
- 4 to 8 piece interlocking puzzle with tray
- 8 to 15 piece interlocking puzzle with tray
- Varied piece jigsaw puzzle

B. Reproduction of Patterns/Models:

1. Reproduce patterns from a concrete model made simultaneously with the child such as reproducing a place setting on a place mat.
2. Reproduce patterns from a concrete model.
3. Reproduce patterns from a card the same size as the concrete objects.
4. Reproduce patterns from a card that is smaller than the concrete objects, therefore more abstract.

EXAMPLES OF PATTERN REPRODUCTION.

- Fine motor manipulatives such as pegs, blocks, beads in a free play center (as in preschool/kindergarten classes).
- Art activities which begin with a model, e.g., to be reproduced.

- Letter and number cards made from a model, e.g., sandpaper or glue, yarn, beaded etc.
- Building models from a picture, e.g., model cars, plastic animals etc., as a free time activity.
- Setting the table by reproducing a place setting on a placemat.
- Putting away food, toys, or clothes according to a concrete or pictured model.
- Decorating a cake according to a model, perhaps given a choice as to design.
- Assembling objects by looking at a concrete model or blueprint. These activities build toward future job skills and should include emphasis on directionality, left-right direction when appropriate, sequencing.

C. Printing and Writing

1. Mark with a crayon or pencil.
2. Trace horizontal and vertical lines (add diagonals, curved lines, crosses, etc.).
3. Imitate lines (define which ones).
4. Make lines from a model.
5. Trace letters, numerals, name and/or words.
6. Make letters, numerals, name and/or words from a model.
7. Reproduce lines, figures, letters, numerals, name and/or words from memory when given a verbal cue.

Expectations of size and confinement of area will change as the student progresses. The writing instrument will change. Some students throw or bite crayons or chalk; therefore, a large pencil might work best. Some students do not exert enough pressure, so felt markers work best, while increasing the pressure is worked on separately.

Materials such as chalkboards of varying sizes, acetate sheets, wipe-off boards, templates, and varying sizes of paper will change and generalize the task. Definition of area can be made through size of paper, squares on the paper, lines which can be felt, colored lines, and increasingly smaller lines.

Sand colored glue, yarn, or string can provide both visual and tactile cues to define lines. Remember that it is difficult to work from one plane to another. Models should be on the same plane.

D. Other fine motor functional activities:

1. Fold paper in 1/2, 1/3, 1/4.
2. Cut with scissors.
3. Put paper in envelopes.
4. Staple paper.
5. Collate, match in a sequence.
6. File - this is an extension of matching.
7. Assemble an object, a task of 4, 6, or 8 steps.
8. Play computer games/lessons.
9. Measure, stir, pour etc. in cooking activities.
10. Perform chores like watering plants and emptying trash.

All of the fine motor readiness skills are taught in structured lessons with planned generalization and application. Reinforcement for achieving becomes more natural when the student is actually helping out by doing a useful, productive task.

Sample Fine Motor Lesson: 18 to 20 Minutes

It is a good idea initially to always start the lesson with one activity that remains the same, then end with another activity so the student is cued to the beginning and end of the lesson. Vary the activities in the middle of the lesson. When an activity is learned independently with the presence of the adult faded, it can be moved to an independent work time or play time. However, enough activities that have a high probability of success should be in the lesson to guard against frustration. Let the student enjoy his successes without pushing immediately for more.

Sample Goals and Objectives

Goal: ____ will independently manipulate objects as intended.

and/or

Goal: ____ will complete an increasing number of learned tasks in sequence, putting each away when finished (indicate number of tasks).

Lesson Objectives

1. ____ will use index finger to activate a computer game. (point response, cause and effect). Time: 4 minutes.

2. ____ will help the teacher hang paintings on a line to dry by pinching clothespins and placing them on the line as the teacher holds the paintings. This activity is also a reinforcer. Time: 4 minutes.

Alternative functional objectives might include using tongs to put vegetables in soup, corn or hot dogs in and out of hot water, winding a clock, using an egg beater to beat soap flakes for art.

3. ____ will trace one inch wide horizontal and vertical lines, then trace a square and circle using templates. Verbally reinforce. Time: 3 minutes.

Functional practice: Tracing horizontal and vertical lines to indicate the lunch count or marking days off on a calendar.

4. ____ will cut on a 1/2 inch line across art construction paper to make strips for an art lesson (strips can also be put away by color as a matching task and reinforcer). Time: 4 minutes.

5. ____ will complete and put away three previously learned activities in 5 minutes with no more than two cues/ prompts (e.g., stringing a 6 bead necklace or making a paper loop necklace, completing a 4-8 piece interlocking puzzle, building a Lego car from a model). Time: 5 minutes.

These activities will of course change to maintain interest and increase skills. They are then moved to independent work time then play time. New objectives then build a more difficult

step on the learned objective, and all are utilized throughout the day at home and school. If it is hard to think of a functional use, perhaps the objective is not functional and hence, not a priority.

BUILDING CONCEPTS

As the student begins to attend and respond, lessons and situations for teaching concepts need to be created. Key concepts will vary from student to student and within different situations. Prepositional concepts, opposites which are variable depending on the point of reference such as big/little, and pronouns are especially difficult for students with autism.

The student needs much concrete experience with the world as s/he is learning concepts. It is usually best to teach specific directions s/he will need in context rather than as separate concepts. Teach "put the cup in the box," "sit on the chair," "the toy is under the table." When a student has learned objects by use, s/he may have trouble with a subsequent direction such as "stand on the chair." Determine what concepts will be most needed and useful as the child begins to mature and gain independence.

Sample Goals and Objectives

Goal:____ will demonstrate understanding of the following concepts in a variety of tasks/settings:

big/little

classification by category

sequencing "first, next, last, middle"

sequencing for comprehension

top/bottom

Lesson Objectives

1. _____ will sort big and little objects which are increasingly smiliar in size. Begin a lesson with labels "big" and "little" affixed to sorting containers; use verbal labels as well.

Functional practice:

Put away big and little toys, e.g., large motor tricycles, scooters, and "hands on" toys; large blocks and balls and small ones; stack adults' chairs and children's chairs.

Sort spoons into silverware trays; books on shelves - large and small; paperclips - oversized and regular size.

Continue to increase the level of fine tuning of this concept throughout the year and look for daily opportunities to incorporate the concept at school and at home. Time: 5 minutes.

2. ____ will classify into broad categories such as "things we eat" (food), "things we play with" (toys), and "things we wear" (clothes).

Practice sorting objects and/or pictures during a lesson. Practice putting the items away by category in class and at home. Time: 5 minutes.

3. ____ will sequence familiar pictures to tell a three-part story in order.

Pictures of every day occurrences either photographs, hand drawn or commercial should be used. Tell the story while manipulating first, next, last cards. Assist the student in placing them in order, beginning with one, expanding to all three. Over time include more and longer sequences. Time: 5 minutes.

4. ____ will listen to a story for ___ minutes and answer one concrete question about it.

Read a simple picture book. The student may help turn pages but not interrupt. On each page or when finished, ask a specific question to which the student responds by pointing, signing, or speaking, e.g., "What is on the boy's head?" Over time, extend the length of listening time, number, and content of

or at least peer turn taking. Time: 2-5 minutes.

SUMMARY

All readiness and fine motor skills should be applied to the student's world and life. However, structured, planned lessons are needed to teach and solidify skills. Sometimes much ingenuity and creativity must be applied to teach or assess the student's ability because of interfering behavior or patterned responses. Always analyze, question, and be prepared to alter procedures, but remember that people with autism need consistency and predictability. Changing the plan or procedure after two or three days of little or no progress is too soon. Alter slowly, but do alter if there seems to be a better way. Take cues from the student. Do not change too much, too often. Success and increasing independence in learning functional life-skills is the goal.