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ABSTRACT

Presented is a report of a 4-month project designed to review literature on projects pertaining to deaf-blind prevocational training, to implement a model prevocational program for six severely handicapped deaf-blind students (10 years old), and to conduct two workshops in the area of prevocational training for deaf-blind students. Provided in Section I are a basic description of the model, its curriculum components (which include daily living skills and vocational type skills), and the task analysis instructional approach making up its process content. Section II contains information on the specific programing (such as large nut and bolt assembly and tying shoes) developed in the course of the project and includes sample reports on the individual progress of one of the six prevocational students in the various program areas. Also given are sample forms such as the individualized program design form, the discovery ball assembly data sheet, and the daily living skills progress report. Among appended material are information on program design and task analysis, as well as illustrations relating to a prevocational training workshop on assembling a 14-piece bicycle brake. (SB)

MODEL DEAF/BLIND PREVOCATIONAL TRAINING PROJECT

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INTRODUCTION

Recently an executive active in the field of vocational rehabilitation was asked a question as to what he thought the vocational future might be for a major portion of the five thousand deaf/blind individuals in the United States who are now approaching adolescence. His answer was a smile, a laugh, and the statement that "there is no way that vocational rehabilitation is ever going to have a viable program for those low level deaf/blind kids".

Certainly modest if not less offensive predictions are to be expected in terms of the vocational future of the more severely handicapped deaf/blind population. Franklin (1974) in describing a course in deaf/blind prevocational training implies this in her definition of "vocational". To her it is "whatever you're going to be doing for the rest of your life", adding the quip "this is not necessarily job oriented". A slightly more optimistic perception is given by English in the following definition of "prevocational services" as they relate to deaf/blind children and youth. "Prevocational services may be defined as the provision of personal adjustment opportunities, social adjustment activities, and work adjustment training in a planned, orderly sequence for children who have received the maximum benefits from the educational program and need to be prepared to enter a work oriented program (English, 1974).

Certainly, the recognition of work involvement as a goal for the deaf/blind is not a new orientation. Rice, as early as 1905, stressed the importance of a work involvement approach for deaf/blind individuals over an entertainment or keep-them-happy approach (Rice, 1905). Lowe, in fact, felt that the secret to happiness for deaf/blind individuals was occupation, and although the occupational tasks he prescribed were of a very basic nature

they did stress learning and productivity (Lowe, 1942). Indeed, the literature is full of success cases reporting deaf/blind individuals having been successfully habilitated or rehabilitated. A sampling of these success cases reveals a surprising variety of vocations, e. g. a pianist (Stevenson, 1923), tool operators (Dauncey, 1952), power tool operator instructor (Sculthorpe, 1965), a carpenter (Smith, 1959), and an artist (Gardner, 1970). The literature also reveals early as well as recent attention to the general prevocational and vocational areas as they relate to deaf/blind individuals. Among the topics reported, are suitable jobs for deaf/blind individuals (Hayes, 1932 , Taylor, 1935, and Salmon, 1963), a successful vocational training process (Prause, 1968), the vocational needs of deaf/blind individuals (Bergman, 1959), vocational training and employment of the deaf/blind (Hirsch, 1929, Keane, 1949, Salmon, 1959 and Bettica, 1955), classification and program recommendations for deaf/blind individuals (Allen, 1931), the need of industry to respond to the vocational needs of deaf/blind individuals (Rusalem, 1958), vocational adjustment (Industrial Home for the Blind, 1958), and the importance of including vocational potential in all assessments (Rothschild, 1958).

Before programmatic Hopes are raised, however, it must regretably be noted that almost without exception the specific success cases, as well as the general reports in the literature, deal exclusively with high functioning deaf/blind individuals whose functional levels are termed educable to normal and above. Allen, as early as 1931, classified deaf/blind individuals according to functional level but the programming recommendations given us center on the "educable" individuals and strongly imply, through exclusion (typical of the literature as a whole), that lower functioning deaf/blind individuals are not worthy of, or reachable through,

habilitative efforts. Although information is available on the characteristics of Rubella (Waterhouse, 1967), a general attitude of indifference, relative to other handicapping conditions, has been observed not only in this country but elsewhere in the world as well (Jones, 1974).

Conversely, it would seem the difficulty of the task and certainly the incidence in this country at the present time would indicate not only the merits of intensified professional efforts but also that these be provided at the earliest possible time in the life of the severely handicapped deaf/blind individual. What evidence is available, however sparse, certainly suggests the value of taking an early educational-training approach (Altshuler, 1963).

The critical need for cooperation and intensified efforts among all sectors of the educational and training fields serving the deaf/blind population has been recently recognized and strongly encouraged (English, 1974; Hagmeier, 1974, and Stoddard, 1974). Along with this recognition, however, has come the realization that few appropriate prevocational training and vocational training and placement resources are available.

What has been occurring recently throughout the professional community (of which this project is a part) can be described as a frenzied effort to come up with at least appropriate prevocational services for the deaf/blind population. It should also be remembered that a major portion of these deaf/blind individuals have the additional handicapping condition of mental retardation, and various behavior disorders i. e. represents the "lower level deaf/blind kids" spoken of earlier.

Synopses of these recent efforts include the following:

A general approach for designing and evaluating prevocational as well as other programs (Opinion Research, 1974) A general assessment tool (Stillman, 1974), a suggested data collection approach (Tweedie, 1974) a recommended regional planning process (Stoddard, 1974), a general prevocational programming recommendation (Hagmeier 1974) a suggested deaf/blind pre-career curriculum guide (Carr, 1974), a final report of a deaf/blind prevocational training course (Franklin, 1974) and needs, current and potential services, necessary skills and important job characteristics for deaf/blind individuals (Final Report, South Central Regional Center, 1974).

With the exception of Carr, the articles and reports tend to be quite general and even with Carr, an otherwise comprehensive and complete work, the instructional process is not explicated, i.e. what the instructor does to teach the task to the student or trainee.

A common related assumption that is prevalent throughout the current literature is that vocational placement resources are to be accepted (although begrudgingly) and must be adapted to. Few, if any, sweeping or creative recommendations are given in this domain. Certainly there is no general indication of more powerful instructional procedures being adopted by, or recommended for, potential employers. There are indications, however, that many vocational performance and adjustment problems could be resolved with the incorporation of more powerful instructional systems (beyond the basic use of signing and similar communication techniques) when working with the more severely handicapped (Gold, 1972; Roades, 1974; Final Report South Central Regional Center, 1974).

In operationalizing the general recommendations outlined in these reports, it is felt that the instructional approach that is selected is of paramount importance. For it is most likely the power or strength of the instructional approach that will determine the success of the trainee or student more than any other factor (Gold, 1973). This focus on the instructional responsibility of the teacher (the non-deaf/blind individual) has been emphasized earlier by Kinney. In the context of befriending deaf/blind individuals, he made the point that "in making a friend of the deaf/blind client you are handicapped - you can't be seen or heard. What can you do?" (Kinney, 1956). As professionals in the deaf/blind field accept responsibility and focus more upon this instructional process, than the handicapping conditions of the student, a major developmental break-through will then most certainly be realized.

To summarize, a review of the deaf/blind and related literature lends support to the following conclusions and recommendations.

1. The vast majority of the pre-vocational work done thus far, when specific, has centered upon the higher functioning portion of the deaf/blind population. Pre-vocational programming efforts need to be centered more on the severely handicapped deaf/blind individuals to more fully meet the needs of the entire deaf/blind population.

2. Conferences, projects, seminars etc. recently sponsored by Regional Centers for Deaf/Blind Services have resulted in a number of reports assessing both current conditions as well as providing recommendations for future action. In large measure these are general in nature indicating a strong additional need still exists for specific programming recommendations.

Overview of Project Objectives

The major objectives of the four month project undertaken by the National Children's Center were four fold.

(1) To review the published research literature and reports documenting projects pertaining to deaf/blind pre-vocational training.

(2) To implement a model pre-vocational program for six severely handicapped deaf/blind students at the National Children's Center.

(3) To report the specific results of the model pre-vocational program outlining the training curriculum and instructional procedures utilized as well as the progress of one of the six pre-vocational students enrolled in the program for example purposes.

(4) To conduct two workshops in the area of pre-vocational training for deaf/blind students, the first to be an intensive training workshop covering newly developed instructional techniques to be attended by teachers and field consultants from each state in the South-Atlantic Region; and, the second, an open, information dissemination workshop reporting the results of the model program and the specific prevocational programming initiated in each state of the region as a result of the initial project workshop and follow-up process.

The introductory comments, along with the list of references at the end of Section II, provide a review of the deaf/blind and related literature in the area of prevocational training.

Section I will deal with a basic description of the model, its curriculum components and the task analysis instructional approach making up its process content.

Section II contains the specific programming developed in the course of the project and sample reports on the individual progress of one of the six prevocational students in the various program areas.

SECTION I

PREVOCATIONAL TRAINING MODEL

BACKGROUND:

Before proceeding with a description of the prevocational training model it should prove useful first of all to specify some of the philosophical underpinnings, assumptions and judgmental decisions made in the process of its development:

1. Population - We basically concentrated our programming efforts on meeting the prevocational training needs of severely handicapped deaf/blind individuals; those individuals, for example, who also have mental retardation, severe behavior disorders, and gross and fine motor problems as major handicapping conditions. The assumption here is that a higher probability exists that those individuals with only mildly handicapping conditions can be served with some relatively minor modifications in current deaf education and blind education programs and existing vocational rehabilitation services.

2. The Model - It was the intent of the project staff to develop a specific model for setting up prevocational programming for severely handicapped deaf/blind students; i.e., a model for getting started. It is not claimed, however, that this is necessarily the model. It is certainly understood and expected, for example, that expansions of the model curriculum will be needed in order to meet the criterion of a fully comprehensive ongoing prevocational program.

3. Capacity to learn - We believe that the capacity to learn even for severely handicapped deaf/blind individuals is largely a function of the instructional approach or techniques that are used. Our philosophy is

that if an individual does not learn it is the instructional approach that is in error, and it is the responsibility of the instructor to look at that approach. It is not so much that the student is unable to learn, but that we may be unable to teach. This, perhaps, is the central crux or pivotal point in our approach to prevocational programming. It is necessary to have a powerful instructional approach in order to bring about the amount of skill acquisition change necessary for this population to be successful in their vocational pursuits.

4. Age - We believe it is never too soon to start teaching a student in prevocational training areas. An early start has been found to be highly significant for other less handicapped but similar populations (Altshuler, 1963). We believe this will be even more important for this population. What we are talking about for these individuals is survival in society, not just an embellishment or expansion upon an already viable set of functional skills.

5. Competency - We also believe that to establish a place in society these individuals must have a vocationally competent base. Therefore, we are of the opinion it is extremely important that basic vocational assets, some apparent and some not so apparent, be tapped to a maximum degree. This opinion has led us to the area of fine motor skills, vocational involvements that rely heavily on the use of hands. This is especially significant for those individuals who are totally deaf and blind. Fortunately many Rubella victims, while fitting into the severely handicapped deaf/blind category, do have a functional level of vision and so can (with the appropriate instructional approach) master these kinds of skills as well as perform a wider variety of vocational tasks. On a beginning basis,

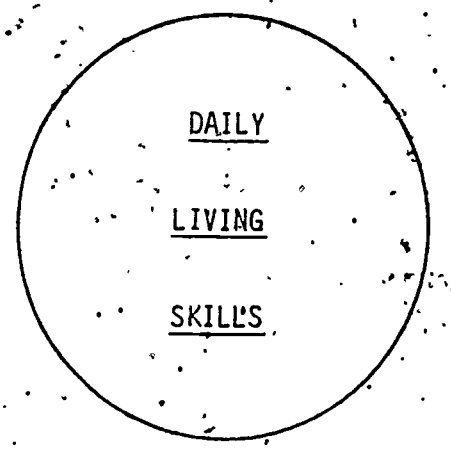
however, we feel that the most viable first steps to be taken are to prepare these individuals for a predictable, stable environment, one requiring minimal mobility or one very typical of small bench assembly work of the type done in electronic and/or mechanical assembly manufacturing companies.

6. Our 1/100 philosophy - We believe, not only in the context of this project, but in a general sense at the National Children's Center, that as we train one student we can do this in such a way that hundreds of others in the community who, while not participating in the direct learning experience, will also be able to benefit from the effort. This requires an involvement in many avenues of dissemination, training and sharing of techniques, skills and results. In terms of this specific project every effort was made to establish a program and a model in such a way that the benefits of it could be transportable as broadly as possible, hopefully acting as a springboard for establishing and embellishing efforts throughout the region in the prevocational programming area.

As stated earlier, the model that will be described is one for setting up or developing a prevocational program for deaf/blind students. This being the case, the first and necessary procedure to be followed was that of setting goals, deciding what would and would not be included in the initial curriculum. In deciding what would and would not be included in the initial curriculum two basic guidelines were used. First, that the units be ones that would direct severely handicapped deaf/blind toward independence in their personal living environments (food, clothing, interaction, hygiene, etc.) and second, that the curriculum would include units to maximize the vocational competence of these people. Figure 1.

MODEL PREVOCATIONAL PROGRAM FOR SEVERELY HANDICAPPED DEAF-BLIND STUDENTS

BASIC TRAINING COMPONENTS

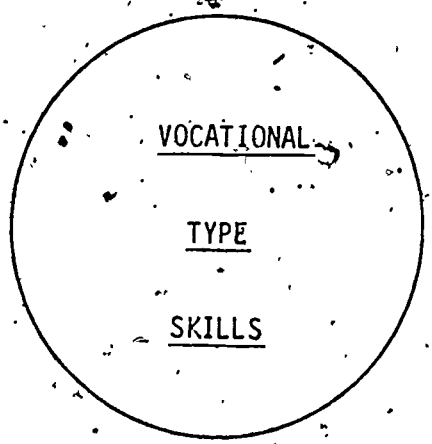


SELF CARE/PERSONAL HYGIENE
- Toileting
- Hand Washing

FOOD PREPARATION AND RELATED SKILLS
- Table Setting
- Simple Meal Preparation
- Clean Up Preparation

LANGUAGE/COMMUNICATION SKILLS
- Receptive
- Expressive

OTHER ALTERNATIVE & FUTURE COMPONENT AREAS
- Extensive Mobility Training
- Gross Motor/Physical Fitness Programing
- Leisure Time Use
- Residential Skills



BASIC PREVOCATIONAL SKILLS
- Instruction Following
- Discrimination & Classification
- Left to Right Progression
- Simple Assembly Tasks

COMPLEX PREVOCATIONAL SKILLS
- Bicycle Brake Assembly
- Printed Circuit Board
- Two or More Person Assembly Line

OTHER ALTERNATIVE AND FUTURE COMPONENT AREAS
- Training on Contract Work
- Expansion & Development of Delayed Reinforcement Capabilities

FIGURE 1

gives an overview of the basic model in terms of its curriculum components. As can be seen from the diagram the curriculum is conceptually divided into two major areas; the first being daily living skills, and the second being vocational type skills (those skills more directly related to the work setting). In the daily living skill areas there are three main component areas that we included in the initial program: 1) basic self-care/personal hygiene (toileting, hand washing, toothbrushing); 2) food preparation and related skills (table setting, simple meal preparation, and clean-up procedures); and 3) expressive and receptive language and communication skills especially relevant to the prevocational setting. Training areas that have been an ongoing part of the deaf/blind educational program at the National Children's Center and have been incorporated into the prevocational curriculum are mobility training, gross motor development activities, and a general physical fitness program. We believe all three of these areas are not only relevant to the work setting but also will help to develop leisure time skills on the part of the students.

The area of vocational type skills is divided into two sub-component areas, basic prevocational skills and complex prevocational skills. As stated earlier a strong emphasis is placed on small bench assembly type tasks. The training curriculum of the basic prevocational skills includes units designed to teach instruction following, discrimination and classification of objects, left to right progression, and simple assembly skills.

In the complex prevocational area the major training units are the bicycle brake assembly (a complex fourteen piece, thirty-three step assembly task), and for those students having some functional vision, a six component

printed circuit board assembly task and two or more person assembly line tasks. Additional units to be added will include training in actual contract work, and development of the students' delayed reinforcement capabilities. By delayed reinforcement capability, we mean the ability to relate to one's work beyond its inherent reinforcing qualities to for example, financial compensation, normally requiring a considerable delay before being realized.

INSTRUCTIONAL APPROACH

In selecting an appropriate instructional technology it was quickly realized that in order to help our students reach a significant level of personal independence and vocational competence it would be essential that the training techniques be highly adaptable and effective even with a severely handicapped deaf/blind population. In this regard, we believe we have more the instructional approach rather than just an instructional approach. The general approach which is totally compatible with a signing communication system is that of behavior analysis (looking and working with the total learning environment of the individual). In its simplest form this can be approached in three steps; first, looking at the discriminative stimulus (physical prompts, gestural or signing cues, indicators, feedback, etc.) that can be identified and/or developed to help the deaf/blind individual know what it is he is being asked to do; second, looking at the task itself and breaking it down into teachable parts to be taught in a particular structure; and thirdly, looking at all those items, activities, interactions, etc. in the environment having a motivating or reinforcing quality for the individual as he does complete small parts of learning.

The specific behavioral analysis approach that we believe is most relevant for a prevocational training model is task analysis. The specific task analysis approach that served as the central instructional core of the model, especially in the area of complex assembly tasks, was that developed by Dr. Marc Gold. Dr. Gold was an invaluable consultant to the project and his task analysis approach is especially useful in that it is general in scope and is not only applicable to bench assembly work but also to daily living skills as well.

In the first of the two workshops sponsored by the project, Dr. Gold presented a general description of the task analysis procedure. The following outline, largely prepared from Dr. Gold's workshop presentation provides an overview of this task analysis approach. (It should be noted that since the workshop Dr. Gold has prepared a fully descriptive monograph on task analysis.

TASK ANALYSIS

As noted in Deaf/Blind Prevocational workshop presentation
March 25, 1975, Washington, D. C., by Dr. Marc Gold

1. Task Analysis -- All of the activity which results in there being sufficient power for the learner to acquire the task.

a. Method Task Analysis - the basic way in which the task is to be performed.

E.g. There are different ways of putting on a sweater, shoes, etc.

Note: This first decision responds to the question of how is the task to be done? (An arbitrary "clinical" decision, i.e. you can almost always think of more ways to do a task).

b. Content Task Analysis - The steps in which the "method" is divided; what the learner acquires, i.e. the specific steps he must follow to complete the task.

c. Task analysis process - the way in which the task is taught; what the trainer does to get the "content" into the learner. There are three subdivisions of a process task analysis:

1) Format - the order of presentation of the "content".

a. Backward chaining; teach the last step in the chain until it is mastered, then the next step, etc. until the learner has all of the steps down.

1. If it is a short task (like putting on socks) then backward chaining is a worthwhile format to follow.

2. Backward chaining can be done in two ways: go back to the step that is known after each trial or go through all of the steps leading up to the step which the learner is working on after each trial.

3. Steps may be grouped together rather than going through them one at a time.

b. Forward chaining - teach first step then second, etc.

c. Total Task Presentation - each time the task is presented the learner gets the whole thing, e.g. the bike brake.

1. Errors are corrected as they occur.

2. The dropping out of errors is the significant indicator of progress.

d. Organized exposure With Feedback - multiple pieces of information which are related but not in a sequential fashion;

e.g. how to get along at a party, social kinds of learning lend themselves to this type of format; e. g. put an individual with socially inappropriate behavior in a different environment and get appropriate behavior, then fade back the individual into an initial environment.

(Note: the bicycle brake is sequentially related.)

e. Mixed - When you have a long chain, take each component and select the particular training process which fits that portion of the task.

f. How to decide which format to use - considerations:

1. How long is the chain. If it is long you might want to select a mixed format.

2. If a chaining format is being used then what will the learner get from the part of task the trainer models for him?

2) Feedback - how the learner knows what is wanted and if he is achieving it.

a: Reinforcement (following a response with items, activities, interactions, etc. which the learner values and will work for, i.e., response strengtheners or motivators).

b. Cues

1. Verbal

2. Non-verbal (gestural or physical prompts)

3. Vibes

c. Fading

3) Task analysis procedure is a description of the training plan or just how the trainer is to proceed, i.e., what the first actions the trainer must take to get the training started, when prompts are given and other guidelines which will help the trainer utilize the task analysis information in the actual training situation.

II. Seven step sequence for doing task analysis

Steps:

1. Method - Decide how the task will be performed
2. Content - Decide the steps of the task
3. Process - What the trainer does.
4. Train
5. When someone doesn't get it - redo the process; what format or what kinds of feedback might I use that I haven't used to help him get it.
6. Redo the content task analysis; for those steps he's having trouble with by asking the question, "How can I sub-divide the present steps into teachable subcomponents?"
7. Redo the method; Is there another way of doing this thing.

Note: When step 7 is redone then step 2 must be redone again also.

Specific applications of the task analysis procedure described above will be given in Section III.

SECTION II

MODEL PREVOCATIONAL TRAINING PROGRAM

The Model Prevocational Training Program established at the National Children's Center under the direction of the deaf/blind prevocational project staff was designed to serve an initial population of six deaf/blind students all ten years of age. All six students have severe hearing impairments with one student also being totally blind. The remaining five students do have functional vision. Collectively, the six students also reflect the various other handicapping conditions typical of the Rubella epidemic population. These conditions include mental retardation, autism or autistic like behavioral involvements, and numerous other problems resulting from inappropriate and maladaptive behavior patterns.

As explained in Section I the model program was divided into two main training areas, vocational type skills and daily living skills. This division was both a physical as well as a conceptual one in that one of the two classrooms out of which the model program functioned was designated as the simulated workshop (or vocational type) skills training area and the other was designated as the daily living skills training area.

PRE-VOCATIONAL (WORKSHOP) SKILLS

Within the workshop area the program was divided into basic and complex skills tasks and again in the basic skills area curriculum units were generally grouped under either simple assembly tasks or discrimination and classification tasks. The following outline gives a brief description of the training units grouped under each area. The units are ranked roughly in order of difficulty and/or order of presentation to the students. Three task analysis samples will then be presented which give both a content and process task analysis as well

as the general description of the task. One of these uses a backward chaining format and two use the total task presentation format.

An outline and samples of the daily living skills training units will be provided at a later point.

I. Basic Pre-vocational Skills

A. Simple Assembly Tasks

Task: Unit I.A.1. - Visual Memory Task: Student will reproduce from memory a series of pictures presented in left to right sequence.

Criterion: 100% accuracy on each card from the initial signed cue "make same."

Materials: Visual memory cards Level III (Developmental Learning Materials) programmed cards numbers 1-6.

Process Format: Total Task Presentation

Task: Unit I.A.2. - Bead Assembly "A": Student will bring each of 10 beads down from a box to a front compartment in left to right sequence, pick up a string, return to beginning of task and string the beads.

Criterion: 100% accuracy in 5 consecutive trials, independently from the signed cue "begin work."

Materials: Beads, string, box with front compartment.

Process Format: Backward Chaining Procedure.

Task: Unit I.A.3. - Large Nut and Bolt Assembly: Student will independently attach two large nuts to two bolts fastened on a board.

Criterion: 100% accuracy on [illegible]

Materials: Nut & bolt board, container for bolts.

Process Format: Backward Chaining Procedure

Task: Unit I.A.4. - Small Nut & Bolt Assembly: Student will follow a a left to right sequence and fasten each nut to the preceding bolt until tight and place completed assembly in a container.

Criterion: 100% accuracy in 5 consecutive trials from the initial signed instruction "begin work."

Materials: 15 round head bolts, 3/4" x 3/8", 15 nuts, 1-10 compartment tray, 1 container for completed nut and bolt assembly.

Process Format: Total task presentation.

Task: Unit I.A.5. - Bagging Procedure: Student will produce 15 packets consisting of 1 spoon, 1 fork, 1 knife and 1 napkin from the initial signed instruction "begin work."

Criterion: 100% accuracy in 5 consecutive trials on step 5.

Materials: Appropriate number of knives, spoons, forks, napkins and plastic bags (all exactly the same), 5 boxes to hold knives, spoons, forks, napkins, bags, and 1 tray for completed packets.

Process Format: Backward chaining.

Task: Unit I:A.6. - Discovery Ball Assembly: Student will follow a left to right sequence and assemble colored pieces to form a ball.

Criterion: 100% accuracy in 5 consecutive trials independently from the signed cue "begin work."

Materials: 1 tray with 9 compartments, 1 discovery ball (developmental learning materials).

Process Format: Total task presentation.

Task: Unit I.A.7. - Wooden Square Assembly: Student will correctly assemble square from materials supplied.

Criterion: 100% accuracy in 5 consecutive trials from the initial cued instruction "begin work."

Materials: Constructo blocks: 4 wooden lengths 3/4 x 2 / 9, 4 four-inch wooden bolts, 4 wooden nuts, 1 piece of cardboard 14' x 11' (with crosses marked off for positioning of bolts), 1 tray to hold pieces of assembly.

Process Format: Total task presentation.

B. Discrimination and Classification Tasks

Task: Unit I.B.I. - Braille Reading: Student will read sign and perform the action of 10 brailled sentences.

Criterion: 100% accuracy from the initial signed instruction "begin" for 5 trials.

Materials: Brailled sheet of paper, 10 sentences, objects to match the words, 1 box, 1 tray.

Process Format: Total task presentation.

Task: Unit I.B.2. - Bead Assembly "B": Student will match beads to a picture model and stringing beads in left to right sequence.

Criterion: 100% accuracy for each card from the initial signed instruction "begin work."

Materials: Programmed bead cards, appropriate number of beads, containers for beads, string, 3 column paper (for placement of beads).

Process Format: Total task presentation.

Task: Unit I.B.3. - Jumbo Pegboard: Student will reproduce a pattern of 10 different colored pegs in left to right sequence.

Criterion: 100% accuracy on last step of task analysis (3 trials).

Materials: Ideal Jumbo pegboard, ideal jumbo pegs.

Process Format: Backward chaining procedure.

Task: Unit I.B.4. - Color Pattern Board: Student will match 1" cubes to the same color in representational form.

Criterion: 100% accuracy on last step of task analysis.

Materials: Color pattern board program, developmental learning materials.

Process Format: Backward chaining procedure.

Task: Unit I.B.5. - Object to Object Match: Student will sort collection of knives, forks, spoons into compartment identified with each item.

Criterion: 100% accuracy on last step of task analysis (5 trials).

Materials: Appropriate number of knives, forks and spoons, 3-part box to hold knives, forks, spoons.

Process Format: Backward chaining procedure.

Task: Unit I.B.6. - TRY I: Student will make large shape discriminations with materials supplied.

Criterion: 100% accuracy on last step of task analysis (2 trials).

Materials: TRY Notebook I, TRY I shapes.

Process Format: Backward chaining procedure.

Task: Unit I.B.7. - Tying shoes: Student will tie wooden training shoe and then own shoe correctly (Step II)

Criterion: 100% accuracy on Step II (15 trials).

Materials: Wooden shoe with lace, child's own shoe with lace.

Process Format: Backward chaining procedure.

Task: Unit I.B.8. - Sorting Bolts: Student will sort bolts into two categories according to head shape and size.

Criterion: 100% accuracy in 5 consecutive trials independently, from the signed cue "begin work."

Materials: 25 hexagon head bolts 1" x 3/8", 25 round head bolts 3/4" x 1/4", 3 boxes.

Process Format: Total task presentation.

II. Complex Assembly Tasks

Task: Unit II.A. - Bicycle Brake Assembly: Student will correctly assembly fourteen piece Bendix coaster brake.

Criterion: 100% accuracy in six out of eight consecutive trials.

Materials: 4 Bendix coaster brakes (disassembled), 1 tray, stop-watch.

Process Format: Total task presentation.

Task: Unit II.B. - Printed Circuit Board Assembly: Student will correctly assemble six component printed circuit board assembly.

Criterion: Acquisition: 100% accuracy in five consecutive circuit board assemblies.

Materials: 12 components, 2 boards with 50 holes each, a jig for holding the boards upright. Six small containers for the components.

Process Format: Total task presentation.

Task: Unit II.C. - Two Person Assembly Line Task: Students will correctly fold and box towels and wash cloths responding correctly to the words "towel," "box," "wash cloth," "fold" and "in."

Criterion: Acquisition: 100% accuracy for 8 out of 10 trials.

Materials: 10 towels, 10 washcloths, 10 boxes, 1 table, 1 chair.

Process Format: Total task presentation.

Task: Unit II.D. - 3 Person Assembly Line Task: Three students in assembly line fashion will correctly fold, staple and insert paper in envelopes correctly responding to the words "fold," "paper," "envelope," "box" and "stapler."

Criterion: 100% accuracy for Steps 3, 5 and 9 as specified on program design form.

Materials: 10 pieces of paper, stapler, 10 envelopes, 1 box.

Process Format: Total task presentation.

The full use of the task analysis procedure can be seen in the three program write-ups which will shortly follow. The task units included are Bolt Discrimination Unit, the Bagging Procedure and the Discovery Ball Assembly.

A total task format similar to that used in the bicycle brake (the training task generally used by Gold) is used for the Discovery Ball Assembly. The following training and data collection procedures recommended by experienced "task analysis" trainers (Dan O'Brien and Debbie Gibson) for teaching the bicycle brake assembly to deaf/blind students is included as it is applicable for this task. A complete task analysis of the Bicycle Brake Assembly, the physical prompt hierarchy, and the instructional procedure hierarchy are provided in Appendix A.

Coaster Bicycle Brake (total task presentation):

Training and Data Collection Procedures for Deaf/Blind Students

Discrimination Errors, i.e., places expander on upside down: Discrimination errors are responded to by a sign that means "Try another way." The sign developed by Dr. Gold is a light squeeze on the wrist. Sensing the moment for giving the sign is an important skill to develop. It should be given when the trainee has committed himself (made the decision) to place a piece incorrectly but before he/she has actually completed the mistake. The deaf-blind students will have to be taught the meaning of the sign. This is done by an obvious procedure of turning the piece over within the student's hand. When the error is corrected a "good" should be communicated to the student with a pat on the back that does not interrupt the assembly process. Discrimination errors are recorded as a minus in the box under the appropriate piece.

Manipulation Errors, i.e., the trainee is unable to independently seat the arm: A manipulation error is any error that requires a physical assist from the trainer. Manipulation errors are recorded as a minus in the box under the appropriate piece and are also counted as slash marks or with a mechanical counter. The total number of slash marks or the total on the counter for each trial is then recorded in the box on the data sheet marked assist. An assist in helping the student find the next piece is recorded as an order error only and not as a manipulation error. An assist to help the student learn the meaning of the sign "Try another way" is recorded only as a discrimination error and not as an assist.

Order Errors: Order errors occur when a student picks up any piece other than the next one to be assembled. The total number of order errors for each trial is recorded in the order column. Order errors do not count as minuses under a particular piece. Order errors will be plentiful at first.

Errors: The sum total of all minuses is recorded in the error column and is thus the total of the discrimination and manipulation errors.

Time: Each trial is timed beginning with the setting out of the pieces.

Data Collection: At first a separate person will probably be required to take down the data, as the trainer's hands will be busy showing the student where the pieces are.

Rule of Diminishing Feedbacks: Each time an error is corrected try to give enough information to correct it but less than the time before. Fade out physical assists. Gradually make them more subtle and encourage the student to perform more and more independently.

Demonstration: On the first trial help the student manipulate the pieces as he/she sets them out so that he/she gets to know them. Introduce the acquisition tray and its compartments to the student. Such exploration should gradually be faded out. As the student picks up each piece to be assembled show him/her how to move his/her fingers to check for the relevant characteristics of the piece.

Order: The order of the pieces can be taught by having the student feel along the empty boxes until he/she reaches the next piece.

Attention Span: Generally a trainee runs through about four trials per session. Clinical judgment should be used to determine whether this is the right number for each student. Setting up is valuable as it teaches the correct order to the student. However, it may be deleted if it is too much for the student's attention span.

Off-task Behavior: Communicate to the trainee that this is a time for work. Do not allow irrelevant behavior during the sessions. To use a Gold phrase, help him develop a good feeling toward work.

Criterion: Criterion for the sighted and hearing retarded population with whom Dr. Gold has done most of his work is six perfect trials out of eight.

Hopefully, it will prove a meaningful measure of learning with the deaf-blind students.

Reinforcement: Dr. Gold has primarily worked on introducing the brake assembly to students as a reinforcing task in itself. Primary reinforcement was used with one of the deaf-blind students but only after a considerable period of time and at a point when boredom appeared to be significantly reducing his learning rate. Dr. Gold has worked on the premise that no news is good news. In effect, he believes that silence is the reinforcer.

Note: The complete task analysis for the bicycle brake assembly is included in Appendix A.

NATIONAL CHILDREN'S CENTER, INC.

Deaf-Blind Project

Individualized Program Design Form

Student: _____

Task analysis for: Sorting Bolts

Criterion: 100 percent accuracy in 5 consecutive trials.

Materials: 15 round head bolts 3/4" x 3/8"
15 hexagon head bolts 3/4" x 3/8"
3 containers

Content: See: student actions on form

Process: See: Instructors actions on form

Format: Total task presentation

Feedback: Physical prompt hierarchy, signed cues.

Reinforcement: social: sign "good boy" and star.

Pre-test/baseline information:

5/16/75

NATIONAL CHILDREN'S CENTER, INC.

Deaf-Blind Project
Individualized Program Design Form

PROCESS				CONTENT	PROCESS		
Instructor's Actions					Reinforcement		
Verbal or Signed Instruction	Set up Cues	Gestural Cue(s)	Physical Prompt(s)	Student's Actions[1]	Reinfs.	Sched.[2]	Criterion Level[3]
1. "Begun work"	Present 3 containers. Middle container holds nuts.		Manipulate child's hands through first 2 trials	Child will pick up round head bolt from group of bolts and place it in container on his right. Child will pick up hexagon head bolt from group of bolts and place it in container on his left. Continue process until all bolts are sorted.	Sign "good boy" and star.	FR_1	2
"Finish" sign given at completion of task							

[1]Minimal behavioral response for a successful trial. [2]FR_1 = Reinforce after each successful trial. FR_2 = Reinforce after every second trial. FR_3 = Reinforce after every third trial, etc. [3]Number of correct responses required before moving on to next step.

NATIONAL CHILDREN'S CENTER, INC.

Deaf-Blind Project
Individualized Program Design Form

PROCESS				CONTENT	PROCESS		
Instructor's Actions					Reinforcement		
Verbal or Signed Instruction	Set up Cues	Gestural Cue(s)	Physical Prompt(s)	Student's Actions[1]	Reinfs.	Sched.[2]	Criterion Level[3]
2. "Begin work."	Same as page 1		Use physical prompt hierarchy	Same as page 1	Sign "good boy" and star.	FR1	5

[1]Minimal behavioral response for a successful trial. [2]FR_1 = Reinforce after each successful trial. FR_2 = Reinforce after every second trial. FR_3 = Reinforce after every third trial, etc. [3]Number of correct responses required before moving on to next step.

NATIONAL CHILDREN'S CENTER, INC.
Deaf-Blind Prevocational Project
Individualized Program Design Form

Task analysis for: Bagging procedure - Student will produce 15 packets consisting of 1 spoon, 1 knife, 1 fork, and 1 napkin from the initial signed instruction "begin work." Criterion: 100% accuracy in 5 consecutive trials on step 5. Materials: appropriate number of knives, spoons, napkins, forks and plastic bags (all exactly the same) 5 boxes to hold (separately) knives, spoons, forks, napkins, plastic bags and 1 tray for completed packets. Format: Backward chaining. Reinforcement - sc sign "good work."

(Process (Instructor's Actions)				Content (Student's Actions[1])	Process Reinforcement		
erbal or Signed Instruction	Set up Cue(s)	Gestural Cue(s)	Physical Prompt(s)		Reinfs	Sched.[2]	Criterion Level[3]
"Begin Work"	Trainer places 5 boxes in front of the student in the following order--bags, knives, forks, spoons and napkins. Packets will be placed in a tray on the floor to the right of the student.		Guide student's hand to first box, gesture to pick up bag, point to next box, gesture to pick up knife and place in bag; same for spoon, fork and napkin, guide child's hands to place finished packet in tray.	1. Student will begin with the first box on the left, pick up a plastic bag and proceed to bag a knife, spoon, fork and napkin: Release packet in tray and return to the beginning. She will follow the above procedure 5 times.			
Finish" sign is given at completion of task before reinforcer.					Social	FR_5	25

[1]Minimal behavioral response for a successful trial. [2]FR_1 = Reinforce after each successful trial. FR_2 = Reinforce after every second trial. FR_3 = Reinforce after every third trial, etc. [3]Number of correct ... to next step

(Process Instructor's Actions)				(Content Student's Actions[1])	Process Reinforcement		Criterion Level
Verbal or Signed Instruction	Set up Cues	Gestural Cue(s)	Physical Prompt(s)		Reinfs.	Sched.[2]	
"Begin work"	Trainer places 5 boxes in front of the student in the following order--bags, knives, forks, spoons and napkins. Packets will be placed in a tray on the floor to the right of the student.		Guide student's hand to first box; gesture to pick up bag, point to next box, gesture to pick up knife and place in bag, same for spoon fork and napkin.	Student will . . . . . . to the beginning. She will follow the above procedure 5 times.			
Finish" sign is given completion of task, fore reinforcer.					Social	FR_5	25

erbal or Signed Instruction	Set up Cue(s)	Gestural Cue(s)	Physical Prompt(s)	(Content Student's Actions)	Process Reinforcement		Crit. Level
					Reinfs.	Sched.2	
"Begin Work"	Trainer places 5 boxes in front of the student in the following order--bags, knives, forks, spoons and napkins. Packets will be placed in a tray on the floor to the right of the student.		Guide child's hands to first box and gesture to pick up bag. Point to boxes 2, 3,4 and 5.	Student will . . . . . to the beginning. She will follow the above procedure 10 times.			
"Finish" sign is given at completion of task before reinforcer.					Social	FR_{10}	50

35

(Process Instructor's Actions)				(Content Student's Actions[1])	Process Reinforcement		Criteria Level[3]
rbal or Signed struction	Set up Cues	Gestural Cue(s)	Physical Prompt(s)		Reinfs.	Sched.[2]	
"Begin work"	3. Same as 1		Point to first box	3. Child will ... to the beginning She will follow the above procedure 15 times.			
nish" sign given completion of task ore reinforcer.					Social	FR_{15}	75

(Process Instructor's Actions)				(Content Student's Actions[1])	Process Reinforcement		Criteri. Level[3]
erbal or Signed nstruction	Set up Cues	Gestural Cue(s)	Physical Prompt(s)		Reinfs.	Sched.[2]	
"Begin work"	5. Same as 1			5. Child will ... She will follow the above procedure 15 times			
inish" sign is ven at completion task before reinf.					Social	FR_{15}	75

NATIONAL CHILDREN'S CENTER, INC.
Deaf-Blind Prevocational Project
Individualized Program Design Form

Student: Lucy - Task analysis for: Discovery Ball Assembly - student will follow left to right sequence and assemble colored pieces to form a ball. Criterion : 100% accuracy in 5 consecutive trials, independently from the signed cue "begin work." - Materials: 1 tray with 9 compartment, 1 Discovery Ball (Developmental Learning Materials) - Format: Total Task Presentation - Feedback: Physical prompt heirarchy - signed cues. Reinforcement - social - "good girl."

(Process Instructor's Actions)				(Content Student's Actions[1])	Process Reinforcement		
bal or Signed nstruction	Set up Cues	Gestural Cue(s)	Physical Prompt(s)		Reinfs.	Sched.[2]	Criterion Level[3]
"Begin Work"	Trainer places disassembled pieces of ball in the following color order in tray: axle, small blue, yellow, large red, white large blue, orange, green, small red.		Use physical prompt heirarchy	Student assembles the ball in left to right sequence 1. Grasp axle with left hand and hold in front of chest perpendicular to the table. 2. Left hand holds axle, right hand picks up small blue piece and places it with rim facing down over the axle. 3. With left hand supporting axle, right hand turns piece until tight. 4. Hold. Left hand holds axle. First four finger of right hand are placed over blue piece and right thumb grasps the bottom of blue piece. 5. Over - Left hand releases axle. Right hand flips the assembly clockwise until the blue piece is resting on the table.			

imal behavioral response for a successful trial. [2]FR_1 = Reinforce after each successful trial. FR_2 = Reinforce after ever 2nd trial. FR_3 = Reinforce after every third trial, etc. [3]Number of correct responses required before moving on to next

(process Instructor's Actions)				(Content Student's Actions[1])	Process Reinforcement		Criteria Level[3]
rbal or Signed Instruction	Set up Cues	Gestural Cue(s)	Physical Prompt(s)		Reinfs.	Sched.[2]	
				6. Hold - Left hand grasps the middle of the axle. Right hand releases blue piece. 7. Pick up yellow piece and place with rim facing up over the axle. Follow same procedure for next two pieces - red and white 8. Pick up large blue piece and place with rim facing down over axle. Turn until tight. 9. Pick up next three pieces orange, green and red and place with rim down over axle. 10. Last red piece → turn clockwise until tight.			
nish is signed at ıe completion of sk before rein- ɔrcer.					Social	FR y	5

NATIONAL CHILDREN'S CENTER, INC.
Deaf-Blind Prevocational Project
Discovery Ball Assembly
Data Sheet

Name: _____

Date	axle	blue	tight	hold	over	hold	yellow	red	white	blue	tight	orange	green	red	tight	Number of errors	Time

Key: - = Error, step not completed independently (requiring physical prompt or signed cue).
+ = Step completed independently

Communication System

The basic communication system used in the Prevocational Project was that of signing, finger spelling and the non-verbal instructional techniques (physical prompts, blocking, feedback, etc.) outlined in the Task Analysis of the bicycle brake and similar vocational task assembly procedures. As a general rule total communication is used throughout the deaf/blind program.

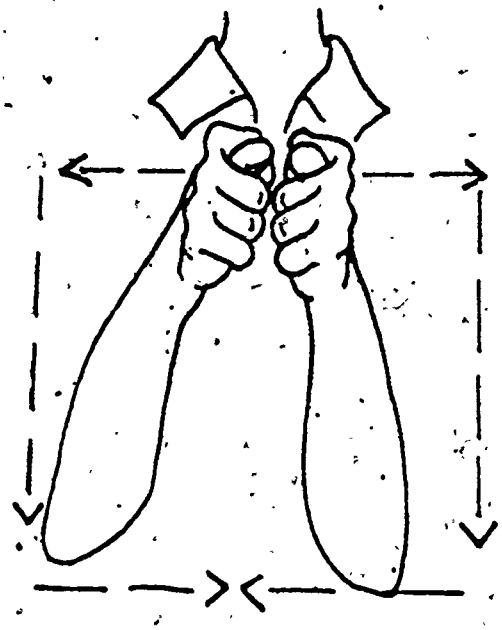
The signing texts used as basic references at the National Children's Center are A Basic Course in Manual Communication (1973) and Basic Preschool Signed English Dictionary (1973). These, however, simply reflect a local preference. Of greater impact and value are those signs found to be especially vital to the model prevocational program developed. These would include the standard signs for:

eat (along with familiar food signs)
milk
toilet
sit
stand
begin (work); start (to work)
finished
good
stop
bad
time (to ...)
yes
no
name signs (of teachers and students)

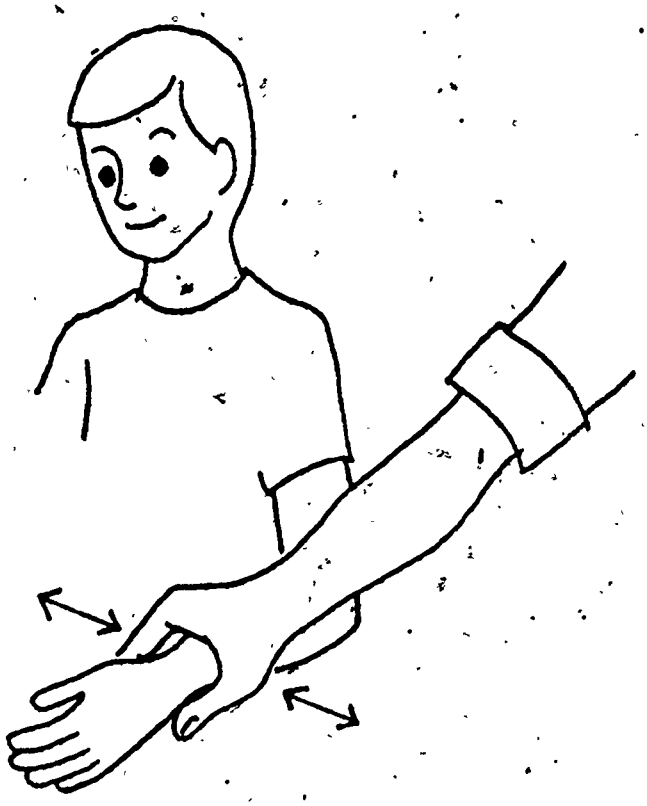
Included below are the written explanations of three signs developed specifically for the model prevocational project. All three of these signs, as with the standard signs, are done with the hands away from the body and usually start at the chest level. Figure 2 also provides a graphic illustration of the three signs.

1. Sign: "tray"
   (a) Make a manual "t" sign with both hands centered together in front of the teacher's chest.
   (b) Move "t"'s away to sides, down, and back to middle, forming a square.
2. Sign: "Try another way"
   (a) Thumb and index finger placed to form a bridge over the student's wrist.
   (b) Thumb and index finger rested on sides of wrist.
   (c) Gently apply pressure and release.
3. Sign: "Placemat"
   (a) Arms are bent at elbows which are held close to instructor's sides.
   (b) With fingers close together hands are extended in front, face down.
   (c) Hands are moved together until forefingers touch.

Note: All signs are accompanied with voice except "Try another way" which is often used without accompaniment when the student is working to complete an assembly task.

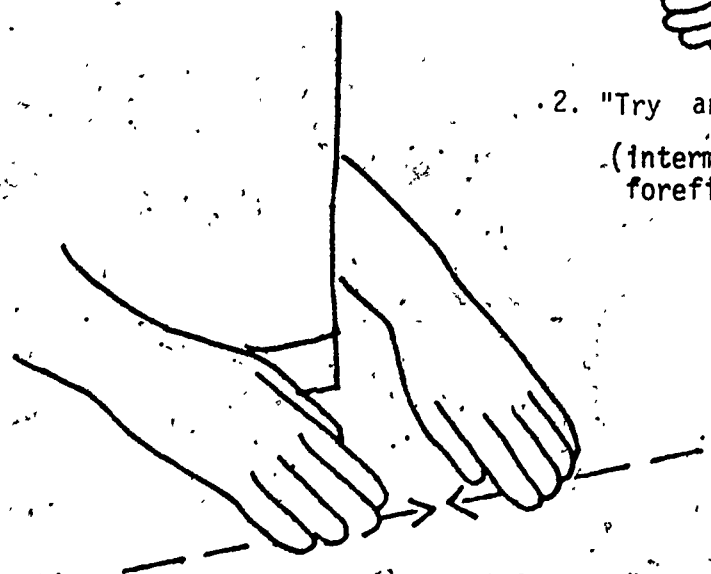


1. "tray"



2. "Try another way"

(intermittent pressure exerted with thumb and forefinger on child's wrist)



3. "Placemat"

Figure 2

DAILY LIVING SKILLS

On a long term basis, there are countless training units that can be included in a daily living skill curriculum. A relevant objective of the project however was to establish a model for setting up a prevocational program. With this in mind it was felt that the initial curriculum should serve as a core curriculum to be added to and expanded upon as the program matures.

As will be seen, major emphasis has been placed on the areas of self-care/personal hygiene, simple food preparation, language skills and mobility training all either basic self-care or critical survival skills. The objectives (including communication and language) are given for each training unit. Following this outline, content task analysis descriptions for daily living skill training units are also provided.

I. Self Care/Personal Hygiene

Objectives:

A. Student will learn to toilet independently.

B. Student will follow the proper sequence for handwashing.

C. Student will follow the proper procedure for toothbrushing.

Communication and Language

Objective:

Student will respond receptively to the following signs:

toilet, paper, wash hands, soap, towel, toothbrush, toothpaste.

II. Table Setting

Objectives:

A. Setting tray with proper utensils for lunch.

B. Setting table in appropriate manner from tray.

Communication and Language

Objective:

A. Student will demonstrate knowledge of the appropriate signs for: tray, plate, knife, fork, spoon, napkin, cup, placemat, milk.

B. Student will give the sign for each item expressively.

III. Simple food preparation

Objectives:

A. Student will learn to mix and pour liquids.

B. Student will learn to spread (peanut butter, tuna fish, egg salad) to make sandwiches.

C. Student will learn to make pudding.

Communication and Language

Objective:

Teach student to respond receptively to the following directions: get bread, get knife, get jelly, get peanut-butter, get eggs, get tuna fish, spread, open jar, close jar, open box, pour, mix, put in bowl, get milk, get juice.

IV. Clean-up Procedures

Objective:

Student will learn to wipe up spills, clean off placemats, place dishes in sink, throw trash away, replace tray.

Communication and Language Objective:

Student will respond receptively to the following commands: get sponge, wipe, clean placemat, remove dishes, remove your tray, throw away trash.

V. Mobility Training and Direction following

Objectives:

A. Student will locate classroom upon arrival.

B. Student will locate cubby and hang up clothing.

C. Student will locate work station in simulated workshop.

D. Student will get and return materials with assistance.

E. Student will locate lunch room.

F. Student will go to the bus at the end of the day.

VI. COMMUNICATION AND LANGUAGE

Objectives

Student will respond to the following directions:

A. go to room

B. go to cubby

C. hang up coat

D. put on yellow smock

E. go to your table

F. begin work

G. finish work

H. time for lunch

I. get your coat

J. go to bus

TABLE SETTING

Task: Set own place at table without supervision.

Student will do all of the following independently (I) and in sequence from the initial signed or verbal cue "Get tray.":

Content Task Analysis:

1. Go to set up table I on 5 successive trials.
2. Pick up one tray from a pile of trays I on 5 successive trials.
3. Place tray on set up table I on 5 successive trials.
4. Take one plate from stack of plates on set up table and place it on tray I on 5 successive trials.
5. Take one cup from stack of cups on set up table and place it on tray I on 5 successive trials.
6. Take one spoon from bunch of spoons on set up table and place it on tray I on 5 successive trials.
7. Take one fork from bunch of forks on set up table and place it on tray I on 5 successive trials.
8. Take one knife from bunch of knives and place it on tray I on 5 successive trials.
9. Take one napkin from stack of napkins on set up table and place it on tray I on 5 successive trials.
10. Take on milk carton from group of milks on set up table and place it on tray I on 5 successive trials.
11. Take one placemat from stack of placemats on set up table and place it on tray I on 5 successive trials.
12. Return to own seat at eating table with tray I on 5 successive trials.
13. Place tray on own chair I on 5 successive trials.

14. Put placemat on eating table at own eating area I on 5 successive trials.
15. Place plate in middle of placemat I on 5 successive trials.
16. Place cup at top right of plate on placemat I on 5 successive trials.
17. Place napkin to left of plate on placemat I on 5 successive trials.
18. Place fork on napkin I on 5 successive trials.
19. Place knife to right of plate on placemat I on 5 successive trials.
20. Place spoon to right of knife on placemat I on 5 successive trials.
21. Place milk carton on table by placemat I on 5 successive trials.
22. Return tray to tray pile I on 5 successive trials.

STUDENT PROGRESS DATA

The following material provides individual student progress data and summarization statements and sample data sheets on Lucy, one of the six severely handicapped deaf-blind students enrolled in the model program. The data reported reflects progress made in new programs designed and initiated during the project period (March 6, 1975 through June 30, 1975).

Child Description:*

Lucy - Rubella syndrome, vision defect, profound bilateral hearing loss. Lucy is easily distracted and has a high frequency of self-stimulatory behaviors such as rocking, eye poking and hand clapping. She is able to use signs expressively.

*Note: Names appearing here and elsewhere are not representative of actual clients.

NATIONAL CHILDREN'S CENTER, INC.

Deaf-Blind Prevocational Project

Student: Lucy

Vocational Type Skills Progress Report

Basic Prevocational Skills	Performance Level Reached
Simple Assembly Tasks	
1. DLM visual memory task.	1. 100 percent accuracy. Task completed.
2. Bead assembly "A."	2. Completed step 4; 100 percent accuracy. Presently on step 5 in a six-step objective.
3. Large nut and bolt assembly.	3. 100 percent accuracy. Task completed.
4. Small nut and bolt assembly.	4. Completed step 1; 100 percent accuracy. Presently on step 2 in a three-step objective.
5. Bagging procedure.	5. Acquisition met; 100 percent.
6. Discovery ball assembly.	6. Nearing acquisition level. Needs five perfect trials to meet criterion (see raw data sheet sample).
Discrimination and Classification Tasks	
7. Bead assembly "B."	7. 100 percent accuracy up to number 54. Continuing on task.
8. Object to object matching.	8. 100 percent accuracy. Task completed.
9. Tying shoes.	9. Presently on step 1 in an eleven-step objective.
10. Sorting bolts into categories by head shape.	10. Presently on step 1 in a three-step objective (see sample raw data sheet).
Complex Assembly Tasks	
11. Brake assembly.	11. Nearing acquisition level. Needs six perfect trials to meet criterion (see data summary sheet).
12. Two person assembly line task.	12. Presently on step 1 in a five-step objective.
13. Three person assembly line task.	13. Presently on step 1 in a nine-step objective.

NATIONAL CHILDREN'S CENTER, INC.
Deaf-Blind Prevocational Project
Discovery Ball Assembly
Data Sheet

Name: Lucy

Date	axle	blue	tight	hold	over	hold	yellow	red	white	blue	tight	orange	green	red	tight	Number of errors	Time
5-15	−	−	−	−	−	−	−	+	+	−	−	+	−	+	−	11	
5-16	+	+	−	−	−	−	−	+	+	+	−	−	+	+	−	8	
5-19	+	+	−	−	−	−	+	+	+	+	−	+	+	+	−	6	
5-20	+	+	−	−	−	−	−	+	−	−	−	−	−	+	+	10	
5-21	+	+	−	−	−	−	−	+	−	−	−	−	−	+	+	10	
5-22	+	+	+	−	−	−	−	−	+	+	−	+	+	+	−	7	
5-23	+	+	+	+	+	−	+	+	+	−	−	+	+	+	−	4	
5-27	+	+	+	+	+	−	+	+	+	−	−	+	+	+	+	3	
5-28	+	+	+	+	+	−	+	+	+	−	−	+	+	+	−	4	
5-29	+	+	+	−	+	−	+	+	+	−	−	−	+	+	+	5	
5-30	+	+	+	+	+	+	−	+	+	+	−	+	+	+	+	2	
6-2	+	+	+	−	−	−	+	+	+	−	+	−	−	−	+	6	

Key: − = Error, step not completed independently (requiring physical prompt or signed cue).
+ = Step completed independently

NATIONAL CHILDREN'S CENTER, INC.
Deaf-Blind Prevocational Project
Discovery Ball Assembly
Data-Sheet

Name: Lucy

Date	axle	blue	tight	hold	over	hold	yellow	red	white	blue	tight	orange	green	red	tight	Number of errors	Time
6-3	+	+	+	–	–	+	+	+	+	+	–	+	+	+	–	4	
6-4	+	+	+	–	–	+	+	–	+	+	–	+	+	+	–	6	
6-9	+	+	+	–	–	+	+	–	+	–	–	+	+	+	+	6	
6-10	+	+	–	–	–	+	+	+	+	–	–	+	+	+	+	5	
6-11	+	+	–	–	–	+	+	+	–	–	–	+	+	+	+	6	
6-12	+	+	+	+	+	+	+	+	+	+	–	+	+	+	+	1	
6-13	+	+	+	+	+	+	+	+	+	–	–	+	+	+	+	2	
6-16	+	+	+	–	–	+	+	+	+	–	–	+	+	+	–	5	
6-17	+	+	+	–	–	–	+	+	+	–	–	+	+	+	+	5	
6-18	+	+	+	+	+	+	–	–	+	–	–	–	+	+	+	5	
6-19	+	+	+	–	–	–	+	+	+	–	–	+	+	+	+	5	

Key: – = Error, step not completed independently (requiring physical prompt or signed cue).
+ = Step completed independently

NATIONAL CHILDREN'S CENTER, INC.

Deaf-Blind Prevocational Project

SORTING BOLTS ACCORDING TO HEAD SHAPE, STEP I

Student: Lucy

Date	Hex Head	Hex Head	Hex Head	Hex Head	Hex Head	Hex Head	Round Head	Round Head	Round Head	Round Head	Round Head	Round Head	Errors
5-12	+	−	−	−	+	−	+	+	−	−	−	−	8
5-13	+	+	+	+	−	+	−	−	−	+	+	−	5
5-15	+	+	+	+	+	[illegible]	+	−	−	−	+	+	4
5-16	+	−	+	−	−	−	+	−	+	+	+	+	5
5-21	+	+	+	−	+	+	+	+	+	+	+	+	1
5-22	+	−	+	+	+	+	+	+	−	+	+	+	2
5-23	−	+	−	+	+	+	+	+	+	+	+	+	2
5-27	+	+	+	+	+	+	+	+	+	+	+	+	0
5-28	+	+	+	+	+	+	+	+	+	+	−	−	2
5-29	+	+	+	+	+	+	+	+	+	+	+	+	0
5-30	+	+	+	+	+	+	+	+	+	+	+	−	1
6-2	+	+	+	+	+	+	+	+	+	+	+	+	0
6-3	+	+	+	+	+	+	+	+	+	+	+	+	0
6-4	+	+	+	+	+	+	+	−	+	+	+	+	1
6-7	+	+	+	+	+	+	+	+	+	+	+	+	0
6-10	+	+	+	−	−	−	+	+	+	−	−	−	6
6-11	+	+	+	+	+	+	+	+	+	−	+	+	1
6-12	+	+	+	+	+	+	+	+	+	+	+	+	0
6-13	+	+	+	+	+	+	+	+	+	+	+	+	0
6-16	+	+	+	+	+	+	+	+	+	+	+	−	1
6-17	+	+	+	+	+	+	+	+	+	+	+	+	0

Key: + = Correct
- = Incorrect

NATIONAL CHILDREN'S CENTER, INC.

Deaf-Blind Prevocational Project

BICYCLE BRAKE DATA SUMMARY SHEET

Student: Lucy

Trial	Assists	Errors
1	20	21
10	5	7
30	7	16
50	3	6
66	3	5

NATIONAL CHILDREN'S CENTER, INC.

Deaf-Blind Prevocational Project

Daily Living Skills Progress Report

MORNING PROCEDURE - MOBILITY AND INSTRUCTIONAL CONTROL

Student: Lucy

Level of Response

Instruction	Date	1-17	2-20	3-19	4-3	5-23	6-17							
Locate room, "Go to room."		4	4	3	3	2	2							
Locate cubby, "Go to closet."		4	4	3	3	2	1							
Hang up coat, "Hang your coat."		4	3	2	1	1	1							
Put on smock, "Get yellow smock."		4	3	2	1	1	1							
Go to restroom, "Go to toilet."		4	-	1	1	1	1							
Locate workshop, "Go to your table."		4	3	2	1	1	1							
Begin work, "Start work."		4	3	1	1	1	1							

Key: See instructional hierarchy rating scale

INSTRUCTIONAL HIERARCHY RATING SCALE

Level	Definition
1	Follows instruction (verbal or sign) within five seconds of initial instruction.
2	Follows instruction (verbal or sign) within five seconds of repeated instruction (within ten seconds of initial instruction).
3	Follows instructions upon third repeat of instructions and physical prompts.
4	Follows instructions following above procedure plus continuous physical prompts (showing no resistance).
5	Follows instructions following above procedure plus continuous physical prompts (showing resistance).

NATIONAL CHILDREN'S CENTER, INC.

Deaf-Blind Prevocational Project

FOOD PREPARATION
(Setting Table)

Student: Lucy

Action Related Item	Date	1-17	2-20	3-19	4-3	5-28	6-17						
1. Knife		I	I	✓	✓	✓	✓						
2. Fork		I	✓	I	✓	✓	✓						
3. Spoon		✓	✓	✓	✓	✓	✓						
4. Cup		I	I	I	✓	✓	✓						
5. Napkin		✓	✓	✓	✓	✓	✓						
6. Placemat		-	I	I	✓	✓	✓						
7. Plate		M	M	M	M	M	✓						
8. Milk		-	-	I	✓	✓	✓						
9. Tray		-	-	✓	✓	✓	✓						

Key: ✓ = Independent action

I = Imitation required

M = Manual assistance needed

R = Resistant

NATIONAL CHILDREN'S CENTER, INC.

Deaf-Blind Prevocational Project

FOOD PREPARATION
(Sandwich Preparation)

Student: Lucy

Introductory signed cue, "Time to make lunch."

Signed Instruction	Date:	Level of Response 1-17	2-20	3-19	4-3	5-28	6-17				
1. "Go to lunch table"		4	2	1	1	1	1				
2. "Get the bread"		4	3	2	2	1	1				
3. "Get the peanut butter"		4	2	3	1	1	2				
4. "Get the jelly"		4	2	2	1	1	1				
5. "Get the knife"		4	2	2	1	1	1				
6. "Open the jar"		4	-	-	-	-	-				
7. "Spread the peanut butter"		4	3	3	3	3	3				
8. "Spread the jelly"		4	3	3	3	2	2				
9. "Remove your tray"		1	1	1	1	1	1				

Key: See Instructional Hierarchy Rating Scale

PROJECT SUMMARIZATION

Within a project period of less than four months, the following accomplishments can be reported.

1. An annotated bibliography covering the deaf/blind prevocational and related literature.
2. An ongoing model prevocational program serving six severally handicapped deaf/blind students each showing significant progress in a large number of prevocational tasks they were heretofore totally unskilled in.
3. Demonstration and documentation of an instructional technology adaptable to and effective with severely handicapped deaf/blind individuals.
4. Design, and written documentation of an extensive prevocational training curriculum for deaf/blind students.
5. Demonstration and documentation of an effective mechanism for training deaf/blind teachers and initiating prevocational programming for deaf/blind students in every state of the South Atlantic Region.
6. Dissemination of the Project Results through a General Prevocational Workshop, consultantion services to each state in the South Atlantic Region and the present Final Report.

References

A Basic Course in Manual Communication. National Association of the Deaf, Silver Spring, Maryland, 1973.

Allen, E.E. "The Deaf-Blind." Teachers Forum, Vol. 3, #3, 1931, pp 5-7.

Attshuler, Kenneth Z. and Baroff, George, S. Family and Mental Health Problems in a Deaf Population. Department of Medical Genetics, New York, 1963.

Bergman, Moe. "Rehabilitating Blind Persons with Impaired Hearing." New Outlook for the Blind, 1959, 53, pp 351-356.

Bettica, L. J. and Newton, David. "Great Expectations for the Deaf-Blind." Rehabilitation Record, Vol. 6, #3, May-June 1955, pp 7-11.

Boonstein, Harry et al, Ed. Basic Preschool Signed Dictionary. Galludet College Press, Washington, D.C., 1973.

Carr, LaVernya K., Zemalis, Charles, and Evans, William J. Pre-Career Curriculum Guide for Deaf-Blind, Parts I, II, and III. Southwestern Regional Center for Services to Deaf-Blind Children, 1974.

Dauncey, M. B. "The Training and Employment of a Deaf-Blind Machine Tool Operator." New Beacon, 1952, 35, pp 97-100.

English, Patricia. "Prevocational Services for Deaf-Blind Children and Youth." Innovative and Experimental Happenings in Deaf-Blind Education, North Carolina State Department of Public Instruction, Raleigh, North Carolina, 1974.

Franklin, Barbara. Communication Handicapped Deaf/Blind Program. San Francisco State University, San Francisco, California, undated.

Franklin, Barbara. Final Report: Deaf-Blind Prevocational Course: South Central Regional Center for Services to Deaf-Blind Children through the Callier Center for Communication Disorders and San Francisco State University, June, 1974.

Gardner, Raymond. "The Art of Adversity." New Beacon, 1970, 54, pp 89-90.

Gold, M. W. "Stimulus factors in skill training of the retarced on a complex assembly task: Acquisition, transfer and retention." American Journal of Mental Deficiency, 1972, 76, pp 517-526.

Gold, M. W., and Barclay, C. R. "The learning of difficult visual discriminations by the moderately and severely retarded." Mental Retardation, 1973, 11 (2), pp 9-11.

Gold, M. W. "Task Analysis: A statement and an example using acquisition and production of a complex assembly task by the retarded blind." Exceptional Children, 1976, in press.

Hagemier, Lee. Status Report: A Development Program to Provide Prevocational and Vocational Services for Youth and Adults with Both Vision and Hearing Impairments. Northwest Regional Center for Deaf/Blind Children, undated.

Hayes, Lydia Y. "The Deaf-Blind," World Conference on Work for the Blind, N. Y., 1931, pp 394-396, Published 1932, American Foundation for the Blind.

Hirsh, E. "Germany's Care for Those Who Cannot Hear or Speak or See." New Outlook for the Blind, 1929, 23, #2, pp 35-36, 41.

Industrial Home for the Blind, Rehabilitation of Deaf-Blind Persons, A Joint Project of the Office of Vocational Rehabilitation and the Industrial Home for the Blind. Industrial Home for the Blind, Brooklyn, 1958, 1959. 7V. The results of this two year study are categorized in seven volumes.

Jones, Gideon. "A Look at Programs for the Blind Children with Additional Handicaps in England." Education of the Visually Handicapped, Vol. 6, No. 1, March, 1974, pp 14-18.

Keane, G. E. "The Deaf-Blind and the Workshop." American Association of Workers for the Blind, Proc. 1949, pp 76-80.

Kinney, Richard. "How to Make Friends of Your Deaf-Blind Client." New Outlook for the Blind, 1956, 50, pp 308-309.

Lowe, P. "The Teaching of Handicrafts to Deaf-Blind Persons." New Beacon, 1942, 25, pp 173-175.

Prause, Robert J. "Selective Placement of Two Deaf-Blind Persons in the New York Metropolitan Area." New Outlook for the Blind, 1968, 62, pp 38-43.

"Prevocational Training Programs for Deaf-Blind Children," Design Conference Report, Opinion Research Associates, Inc., Madison, Wisconsin, 1974.

"Regional Planning Program for Prevocational Services to Deaf-Blind Children." Final Report, Published by South Central Regional Center for Services to Deaf-Blind Children through Callier Center for Communicative Disorders, undated.

Rice, Delia. "The Importance of Teaching the Blind-Deaf to Work." The American Annals of the Deaf, 1905, 50, pp 392-395.

Riley, Betty G. "A New Plan in Kansas." New Outlook for the Blind, 1959, 53, pp 161-165.

Roades, Sue-Ann, Pisch, Lillian, and Axelrod, Saul. "Use of Behavior Modification Procedures with Visually Handicapped Students." Education of the Visually Handicapped, Vol 6, No. 1, March, 1974, pp 19-26.

Rothschild, Jacob. "A Few Simple Rules for Observation and Standard Testing of Deaf-Blind Client," Education for the Community on Rehabilitation Services for the Deaf-Blind Person, Proc. 1958, pp 26-40.

Rusalem, Herbert. "Vocational Program for the Deaf-Blind Right Now," Education for the Community on Rehabilitation Services for the Deaf-Blind Person, Proc. 1958, pp 26-40.

Salmon, Peter J. and Rusalem, Herbert. "Vocational Rehabilitation of Deaf-Blind Persons." New Outlook for the Blind, 1959, 53, pp 47-54.

Salmon, Peter J. "The Deaf-Blind." Blindness, Zahl, Paul A., editor. Hafner, New York, 1963, pp 224-232.

Sculthorpe, Arthur. "Using Power Tools." New Beacon, 1965, 49, pp 94-95.

Smith, Geoffrey. "An Atmosphere of Change." New Beacon, 1959, 53, p 90.

Stevenson, E. A. "Helen May Martin, Deaf-Blind." New Outlook for the Blind, 1923, 17, #1, pp 32-33.

Stillman, Robert D., (Ed.). The Callier-Azusa Scale. Callier Center for Communication Disorders, Dallas, Texas, 1974.

Stoddard, Ann. Final Report: Regional Planning Program Prevocational, Vocational Services for Deaf-Blind Children and Youth. Mountain Plains Regional Center for Services to Deaf-Blind Children, September, 1974

Stoddard, Denis W. and Pollock, Donald R. Final Report: Two-Phase Behavior Modification Workshop, National Children's Center, Inc., 1973.

Taylor, E. M. "Occupational and Recreational Opportunities for the Blind-Deaf." New Beacon, 1935, 19, pp 234-237.

Tweedie, David. "Behavioral Change in a Deaf-Blind Multihandicapped Child." The Volta Review, Vol. 6, No. 4, April, 1974, pp 213-218.

Waterhouse, E. J. "Rubella Implications for Education." New Outlook for the Blind, 1967, 61, pp 106-110.

APPENDIX A

Intensive Prevocational Training Workshop

Agenda and Selected Supplementary Material

[illegible] CENTER, INC.
Deaf-Blind Project
Individualized Program Design Form

Student Project SKILLS, Inc. Instructor Deborah Gibson, Dan O'Brien Date

Behavioral goal Trainee is able to assemble independently a 14-piece bicycle brake without errors or prompts.

Materials Stopwatch, assembly tray, 2 to 4 Bendix coaster brakes (disassembled), data sheet

Trial Timed from beginning of set-up to end of assembly, run up to four trials per day.

Instructor's Actions				Student's Actions[1]	Reinforcement		Criterion Level[3]
	Set up Cue(s)	Gestural Cue(s)	Physical Prompt(s)		Reinfs.	Sched.[2]	
I INSTRUCTOR'S SET-UP Trainer starts stopwatch when trainee touches first piece.	Trainer places in random position at top of tray pieces of disassembled brake in the following left to right sequence: hub, expander, bearing, cap arm, nut, hub, sub, shoe, shoe, bearing, drive, bearing, cone.						
II TRAINEE SET-UP Trainer signs "Begin working" by inserting his/her right index	Trainee sits before center of the brake tray and		Prompts are used to correct any trainee mistake on the	Trainee, in the left to right sequence, places pieces in the appropriate set-up compartment on the			

[1]Minimal behavioral response for a successful trial. [2]FR_1 = Reinforce after each successful trial. FR_2 = Reinforce after every second trial. FR_3 = Reinforce after every third trial, etc. [3]Number of correct responses required before moving on

NATIONAL CHILDREN'S CENTER, INC.
Deaf-Blind Project
Individualized Program Design Form

Student Project SKILLS, Inc. Instructor Deborah Gibson, Dan O'Brien Date

Behavioral goal

Materials

Trial

Instructor's Actions					Reinforcement		
~~Verbal~~ Signed Instruction	Set up Cue(s)	Gestural Cue(s)	Physical Prompt(s)	Student's Actions[1]	Reinfs.	Sched.[2]	Criterion Level[3]
finger between left index finger and left middle finger and twisting right index finger. Left palm faces upward. "Work" is signed by the trainer crossing his arms at the wrists.	arranges pieces on board. (No data is taken and trainee corrected by prompts only.) For partially sighted trainees encourage them to set up. For totally blind trainee trainer guides trainee's hands through procedure.		set-up or the assembly. Rule: use only that prompt which gives information for trainee to correct his mistake. See physical prompt hierarchy attached.	assembly tray. Set-up Trainee sits before center of brake tray. Trainee's left hand pulls axle into the far left tray compartment and releases axle. Left hand similarly "sets up" the following pieces in this order: expander, bearing, cap, arm and nut. Left hand rests on lap. Trainee's right hand up" in the following order each piece in the compartment below that piece: hub, sub, shoe, shoe, bearing, drive, bearing, and cone.	no reinforcement		no criterion
I BRAKE ASSEMBLY Immediately upon the trainee making any			Trainer uses the same prompt	The brake assembly procedure is divided into a sequence of trainee behavioral	"Good" is signed by a gentle	Trainer signs "Good" immediately	Of eight consecutive brake assembli

[1] Minimal behavioral response for a successful trial. [2] FR1 = Reinforce after each successful trial. FR2 = Reinforce after every second trial. FR3 = Reinforce after every third trial, etc. [3] Number of correct responses required before moving on

NATIONAL CHILDREN'S CENTER, INC.
Deaf-Blind Project
Individualized Program Design Form

Student Project SKILLS, Inc. Instructor Deborah Gibson, Dan O'Brien Date

Behavioral goal

Materials

Trial

Instructor's Actions					Reinforcement		
Verbal Instructions	Set up Cue(s)	Gestural Cue(s)	Physical Prompt(s)	Student's Actions[1]	Reinfs.	Sched.[2]	Criterion Level[3]
incorrect assembly decision sign "Try another way." Sign made by trainer giving slight, nonpunishing squeeze of trainee's right wrist.			hierarchy as above remembering to diminish the informational content of each succeeding prompt.	responses. Code names for these steps are given across the top of the data sheet beginning with "axle" and ending with "cone." Specified below are the minimal trainee responses necessary for the correct completion of each step during a trial. If the trainee corrects a step completely without a prompt place a plus beneath that step on the data sheet. An incorrect or prompted response receives a minus. Minimal Behavorial Response Necessary for a Correct Step 1. Axle. Trainee's left-hand pincer grasps axle's center and holds axle in front of trainee's chest perpendicular to the table. (For the descriptions of othor trainee manipulations see BRAKE ASSEMBLY, Student Responses attached.)	rubbing of trainee's back. "Good" is the antecedent to "Try another way." No external reinforcement contingencies are used unless trainee misses paid work while working on the brakes. Do not penalize the trainee for brake training	after any student correction of an assembly mistake.	six must be perfect without errors prompts. Depending on one's goal, other, less stringent, criterions might be substituted. For a trainee to move into unassisted production six of eight perfect trials is not unreasonable.

[1]Minimal behavioral response for a successful trial. [2]FR_1 = Reinforce after each successful trial. FR_2 = Reinforce after every second trial. FR_3 = Reinforce after every third trial, etc. [3]Number of correct responses required before moving on

NATIONAL CHILDREN'S CENTER, INC.
Deaf-Blind Project
Individualized Program Design Form

Student Project SKILLS, Inc. Instructor Deborah Gibson, Dan O'Brien Date

Behavioral goal

Materials

Trial

Instructor's Actions				Student's Actions[1]	Reinforcement		Criterion Level[3]
Verbal or Signed Instruction	Set up Cue(s)	Gestural Cue(s)	Physical Prompt(s)		Reinfs.	Sched.[2]	
					The intrinsic reinforcement of the brake assembly is theoretically sufficient to maintain on task behavior.		

[1]Minimal behavioral response for a successful trial. [2]FR_1 = Reinforce after each successful trial. FR_2 = Reinforce after every second trial. FR_3 = Reinforce after every third trial, etc. [3]Number of

II. TRAINEE SET-UP, Physical Prompt Hierarchy
Least information given starts at point one and ranges to most information given at point six.

1. Touch slightly trainee's manipulating shoulder.

2. Push gently trainee's manipulating shoulder.

3. Touch trainee's elbow above manipulating hand.

4. Push trainee's elbow in desired direction necessary to complete manipulation.

5. Push trainee's wrist in desired direction.

6. Instructor places trainee's hand between instructor's hand and manipulated piece as instructor performs necessary manipulation.

III. BRAKE ASSEMBLY, Student Responses (cont'd)

2. Expander (piece of assembly): Trainee's right hand picks up expander, feels for "ears," and places expander, "ears" down, on axle top.

3. Stop (the code name on the data sheet for a manipulation): Trainee's left hand holds axle. Expander is placed against trainee's right palm. Trainee rubs expander against right hand from right hand palm to tips of fingers on right hand, thus screwing the expander down the axle. The stop occurs correctly from one-half inch to two inches from the top of the axle.

4. Cap (piece of assembly): Left hand holds axle. Right hand picks up bearing and forces bearing, exposed balls facing down, over the end of the expander to resting place at bottom of expander.

5. Cap (piece of assembly): Left hand holds axle. Right hand places cap, brim down, down over the expander.

6. Seat (manipulation): Left hand holds assembly. Right hand wiggles cap until cap seats flush over the expander.

7. Hold (manipulation): Right hand holds axle assembly above cap. Left hand releases center of axle. Left index finger and left thumb hold cap in place.

8. Arm (piece: Method 1): Left index finger and thumb hold cap down firmly. Right hand picks up arm (right thumb in crook of arm) and places hole of arm (Bendix side up) down over the axle. Left hand releases the arm and lets hang limp.[1]

9. Nut (piece of assembly): Left index finger and thumb continue to hold cap down. Right hand screws nut down axle until almost tight. (The arm should be raised almost parallel to the table.)[2]

10. Seat (manipulation): Right hand holds cap. Right thumb is placed in crook of arm as right index finger holds opposit side of arm. The arm is moved toward and away from the axle while rotating until the

arm falls and is felt to be seated on the expander.[3]

11. Tighten (manipulation): Left hand holds cap. Right hand tightens nut as arm is forced to sit flush with the expander's nut.

12. Put down (manipulation): Right hand places axle assembly on table to the right side of trainee.

13. Hub (piece of assembly): Left hand picks up hub as right index finger explores inside rims. Hub is placed on table with largest diameter hole facing upward.

14. Hold (manipulation): Left hand holds hub around center.

15. Sub (piece of assembly): Left hand holds hub. Right hand places sub with "ears" pointing up into the hub.

16. Shoe (piece of assembly): Left hand holds hub. Right index finger and thumb pincer grasp end of shoe and place shoe across the top of the hub with shoe's convex side facing up.

17. Insert (manipulation): Left hand holds hub. Right index finger touches the furthest end of the resting shoe and pulls shoe toward the trainee, forcing the shoe to rise perpendicular to the table and fall into the hub.

18. Seat (manipulation): Left hand holds hub. Right index finger touches upper right hand corner of inserted shoe and rotates clockwise, then counterclockwise, until shoe is felt to fall between "ears" of expander and be firmly seated.

19. Rotate (manipulation): Left hand holds the left side of hub. Right hand holds the right side. Hub is rotated until inserted shoe is at 12:00.

20. Shoe (see 16)

21. Insert (see 17)

22. Seat (see 18)

23. Pick up (manipulation): Left hand holds hub. Right hand holds and raises the arm end of the axle assembly.

24. Insert (manipulation): Left hand holds hub. Right hand inserts non-arm end of axle assembly into hub.

25. Lift (manipulation): Left hand raises assembly above table.

26. Seat (manipulation): Left hand holds hub. Right hand holds end of arm and rotates arm clockwise until arm is seated into hub.

27. Hold (manipulation): Left hand holds hub. The axle extending above the arm over the hub is placed between the right ring finger and right pinky. The right thumb grasps the bottom of the hub.

28. Over (manipulation): Left hand releases hub. Right hand flips the assembly clockwise until the arm's end of the axle faces down and the assembly rests on the table.

29. Hold (manipulation): Left hand grasps the middle of the hub. Right hand releases hub.

30. Bearing (piece of assembly): Left hand holds hub. Right hand seats large bearing, with exposed balls facing down, on to the hub.

31. Drive (piece of assembly): Left hand holds hub. Right hand screws drive in clockwise direction forcing drive down into hub. (If drive refuses to screw down have right hand shake upper end of axle and then screw dirve down.)

32. Bearing (piece of assembly): Left hand holds hub. Right hand places bearing, exposed balls down, into the hollow at the top of the drive.

33. Cone (piece of assembly): Left hand holds hub. Right hand screws cone, with nut facing up, into the drive until the cone is finger tight.

[1]Arm (Method 2): This method is appropriate for students with some sight and good fine motor ability. Left hand holds cap. Right hand places arm, Bendix side up, down over the axle.

[2]Seat (manipulation): Left hand holds cap. Right hand holds end of arm perpendicular to table and rotates arm until arm falls and fits flush about the nut of expander. Left index finger and left thumb hold arm seated.

[3]Nut (piece of assembly): Left index finger and left thumb hold arm seated while right hand screws the nut down tight.

COASTER BICYCLE BRAKE TRAINING AND DATA COLLECTION PROCEDURES FOR THE DEAF-BLIND

Data Collection Procedures

At first a separate person will probably be required to take down the data, as the trainer's hands will be busy showing the student where the pieces are.

Discrimination Errors, i.e., the trainee places expander on upside down: Discrimination errors are responded to by a light squeeze on the wrist that means "Try another way." Sensing the moment for giving the sign is an important skill to develop. It should be given when the trainee has committed himself (made the decision) to place a piece incorrectly but before he/she has actually completed the mistake. The deaf-blind students will have to be taught the meaning of the sign. This is done by an obvious procedure of turning the piece over within the student's hand. When the error is corrected, a "Good" should be communicated to the student with a pat on the back that does not interrupt the assembly process. Discrimination errors are recorded as a minus in the box under the appropriate piece.

Manipulation Errors, i.e., the trainee is unable to independently seat the arm: A manipulation error is any error that requires a physical assist from the trainer. Manipulation errors are recorded as a minus in the box under the appropriate piece and are also counted as slash marks or with a mechanical counter. The total number of slash marks or the total on the counter for each trial is then recorded in the box on the data sheet marked assist. An assist in helping the student find the next piece is recorded as an order error only and not as a manipulation error. An assist to help the student learn the meaning of the sign "Try another way" is recorded only as a discrimination error and not as an assist.

Order Errors: Order errors occur when a student picks up any piece other than the next one to be assembled. The total number of order errors for each trial is recorded in the order column. Order errors do not count as minuses under a particular piece. Order errors will be plentiful at first.

Errors: The sum total of all minuses is recorded in the error column and is thus the total of the discrimination and manipulation errors.

Time: Each trial is timed beginning with the setting out of the pieces.

Training Procedures

Demonstration: On the first trial help the student manipulate the pieces as he/she sets them out so that he/she gets to known them. Introduce the acquisition board and its compartments to the student. Such exploration should gradually be faded out. As the student picks up a piece to be assembled, show him/her how to move his/her fingers to check for the relevant characteristics of the piece.

Rule of Diminishing Feedback: Each time an error is corrected try to give enough information to correct it but less than the time before. Fade out physical assists. Gradually make them more subtle and encourage the student to perform more and more independently.

Order: The order of the pieces can be taught by having the student feel along the empty boxes until he/she reaches the next piece.

Attention Span: Generally a trainee runs through about four trials per session. Clinical judgment should be used to determine whether this is the right number for each student. Setting up is valuable as it teaches the correct order to the student. However, it may be deleted if it is too much for the student's attention span.

Off-Task Behavior: Communicate to the trainee that this is a time for work. Do not allow irrelevant behavior during the sessions. Help him develop a good feeling toward work.

Reinforcement: Dr. Gold has primarily worked on introducing the brake assembly to students as a reinforcing task in itself. Primary reinforcement was used with one of our students but only after a considerable period of time and at a point when boredom appeared to be significantly reducing his learning rate. Dr. Gold has worked on the premise that no news is good news. In effect, silence is the reinforcer.

Production: After criterion is reached, sighted and hearing-retarded trainees proceed on the ten days of one-hour simulated production. Only minimal supervision is used. Our student who has finished acquisition has not yet proved ready to move on to one-hour production. His young age and sensory isolation from the experiences of the working world seem to be factors contributing to his lack of a sustained attention span for repetitive work. We have introduced an intermediate step to prepare him for production and, at present, we are working on his work behavior at the production bins. As his behavior becomes more controlled, supervision will be faded out. When he can complete three to four brakes with no prompting and little irrelevant behavior, we will gradually have him work for longer and longer periods of time. Such a program for training production may prove advisable for the other populations of young deaf-blind students.

NATIONAL CHILDREN'S CENTER, INC.
Project SKILLS, Inc.
Coaster Bicycle Brake: Content Task Analysis For The Deaf-Blind*

Student _____ Instructor _____

Trial	Date	Axle	Expander	Stop	Bearing	Cap	Seat	Hold	Arm	Nut	Seat	Tight	Put down	Hub	Hold	Sub.	Shoe	Insert	Seat	Rotate	Shoe	Insert	Seat	Pick up	Insert	Lift	Seat	Hold	Over	Hold	Bearing	Drive	Bearing	Cone	Order	Assist	Errors	Time	Comments
1																																						
2																																						
3																																						
4																																						
5																																						
6																																						
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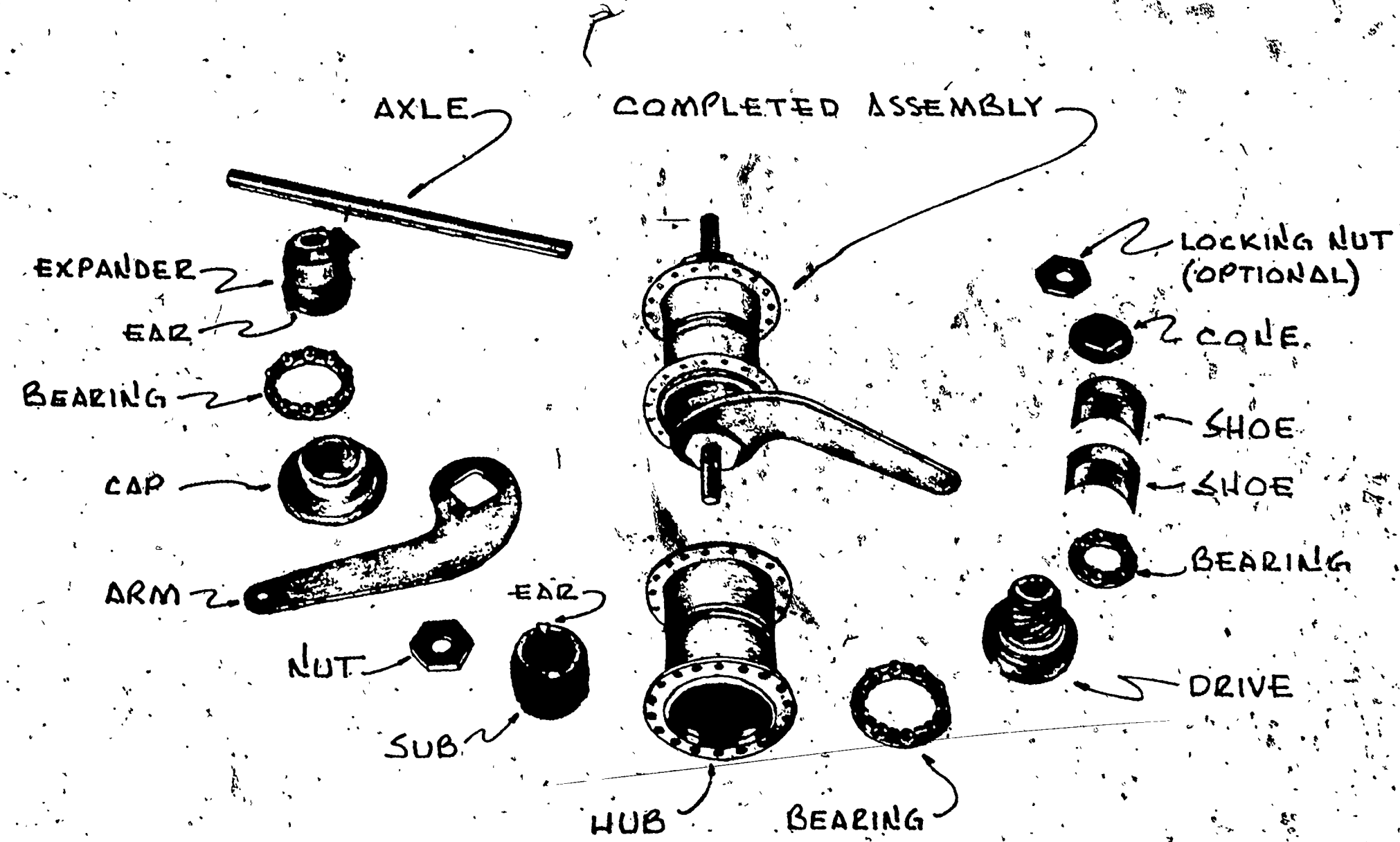
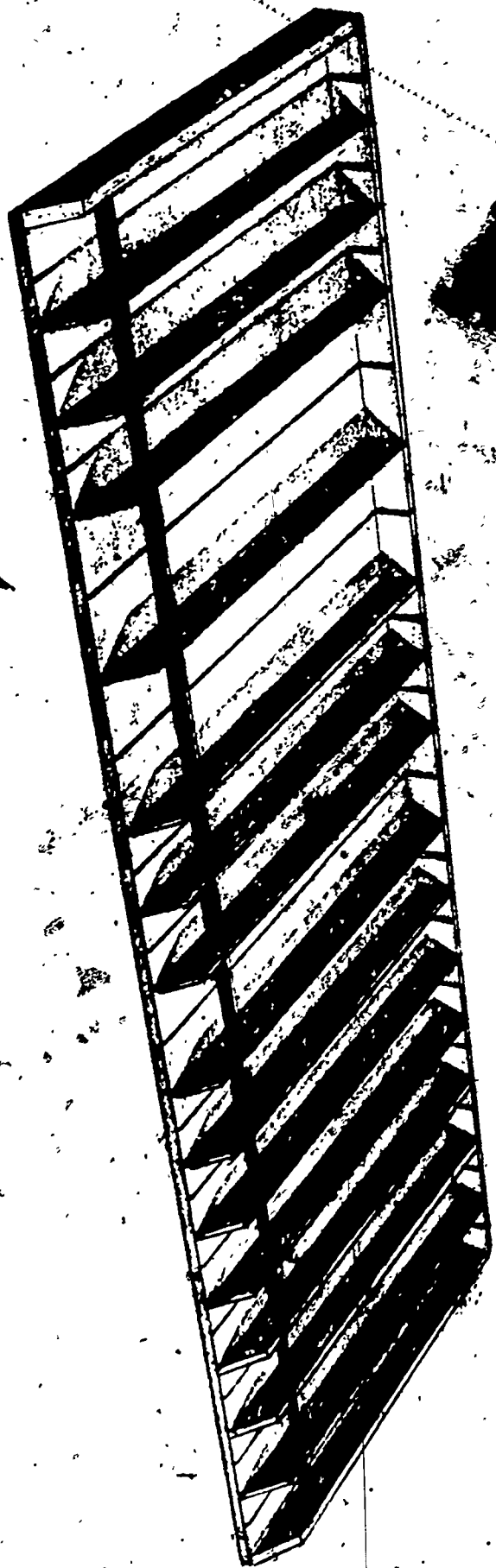
*Developed by Marc Gold, Ph. D., Children's Research Center, University of Illinois, Champaign-Urbana Campus



Coaster brake



Tray

Materials:

1/2" plywood - back, bottom, ends

1/8" tempered masonite fiberboard - dividers

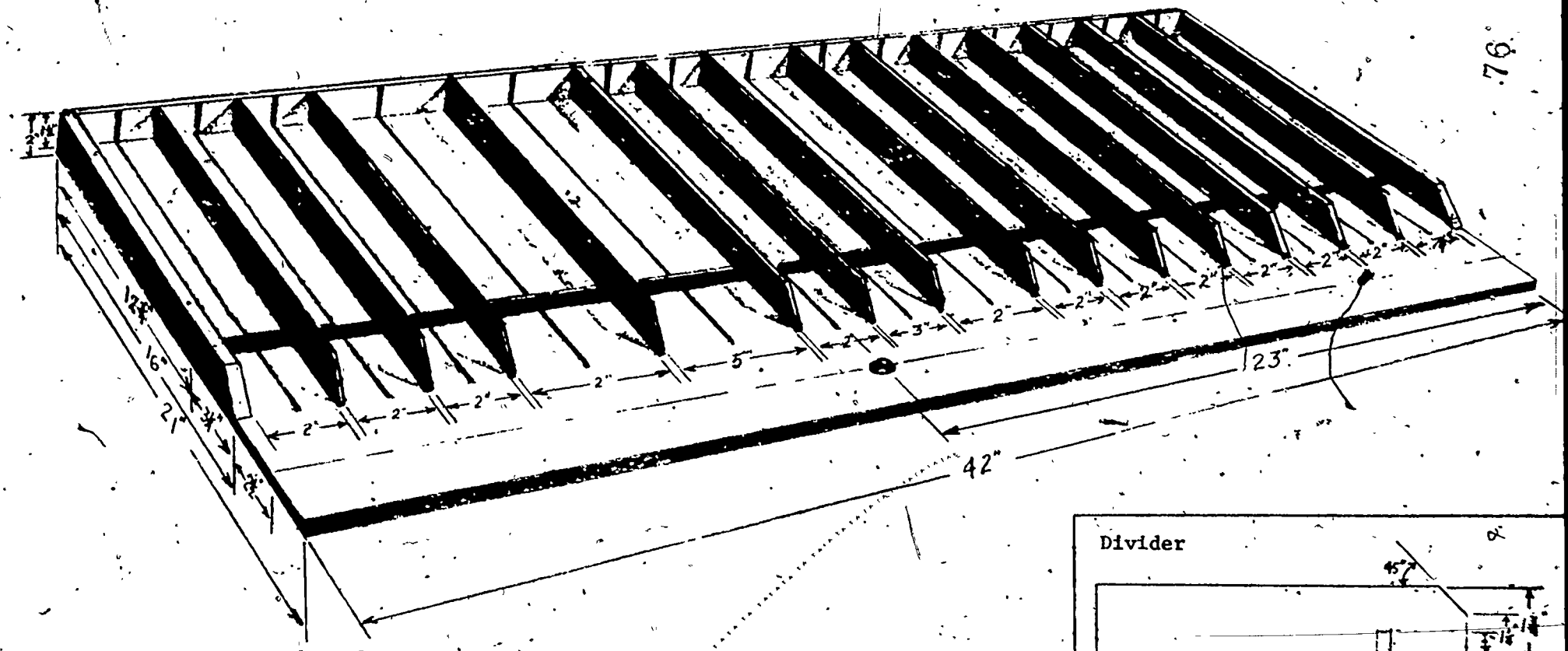
5/8" x 3/16" x 41" pine - set-up board

Notes:

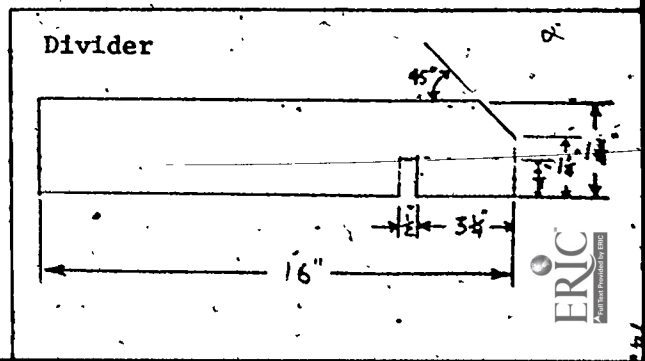
Divider grooves - 1/8" wide x 1/4" deep

Hole - 3/4" dia. x 1/4" deep

Eliminate all unnecessary grooves shown in drawing



Tray



Where to Get

You may order the Bendix Model 70 Coaster Brake at a cost of $2.45 per brake. The address is: Bendix: Bicycle and Ignition Components Division
Bendix Center
Southfield, Michigan 48075
Telephone: A.C. 313/352-5313

Bins for production are ordered through: Sempco, Inc.
West Branch Michigan 48661
Telephone: A.C. 517/345-2750

Four-part #1301 storage bin, seven-part #1303 storage bin, four part #1306, one-part #1424 bench frame. Total cost, $27.74.

APPENDIX B

General Provocational Workshop

Agenda and Selected Supplementary Materials

NATIONAL CHILDREN'S CENTER, INC.

Deaf-Blind Project

Individualized Program Design Form

Student:

Task analysis for:

Criterion:

Materials:

Content:

Process:

Format:

Feedback:

Pre-test/baseline information:

5/16/75

NATIONAL CHILDREN'S CENTER, INC.

Deaf-Blind Project
Individualized Program Design Form

PROCESS				CONTENT	PROCESS		
Instructor's Actions					Reinforcement		
Verbal or Signed Instruction	Set up Cues	Gestural Cue(s)	Physical Prompt(s)	Student's Actions[1]	Reinfs.	Sched.[2]	Criterion Level[3]

[1]Minimal behavioral response for a successful trial. [2]FR_1 = Reinforce after each successful trial. FR_2 = Reinforce after every second trial. FR_3 = Reinforce after every third trial, etc. [3]Number of correct responses required before moving on to next step.

NATIONAL CHILDREN'S CENTER, INC.

Deaf-Blind Project

Physical Prompt Hierarchy

A non-verbal, tactile information cuing system. Least information given starts at point one and ranges to most information given at point six.

1. Touch slightly trainee's manipulating shoulder.
2. Push gently trainee's manipulating shoulder.
3. Touch trainee's elbow above manipulating hand.
4. Push trainee's elbow in desired direction necessary to complete manipulation.
5. Push trainee's wrist in desired direction.
6. Instructor places trainee's hand between instructor's hand and manipulated piece as instructor performs necessary manipulation.

NATIONAL CHILDREN'S CENTER, INC.

Deaf-Blind Project

Instructional Procedure Hierarchy

A verbal/sign language information system. Teacher-expressive, student-receptive (responsive) communication system beginning with a pure language cue (step one) and progressing to paired physical cues for additional information.

1. Follows instruction (verbal or sign) within approximately 5 seconds of instruction.
2. Follows instruction (verbal or sign) within approximately 5 seconds of the repeated instruction.
3. Follows instruction upon third repeat of instruction and physical cue.
4. Follows instruction upon third repeat of instruction and continuous physical prompt (with no resistance).
5. Follows instruction upon third repeat of instruction and continuous physical prompts and shows resistance (fights, bites, runs away, etc.).