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ABSTRACT

The final report describes activities of the Improving Community-Based Instruction Project, which conducted research to improve the effectiveness and efficiency of training in community settings with individuals with severe disabilities. Three areas of research were undertaken: (1) studies of the influence of the location of instruction on the acquisition and generalization of community activities; (2) studies on strategies for establishing reliable stimulus control of student responses in community settings; and (3) studies on the impact of various strategies for building performance of complex chains of behavior. The project also developed procedural manuals to assist practitioners in developing community-based and classroom-based instructional programs. The report lists project objectives and briefly reports project activities and accomplishments. Among conclusions are the need for more comparative research on effectiveness of commonly recommended instructional strategies; examination of strategies leading to the adoption of validated techniques by practitioners; and research on instructional strategies to enhance maintenance of performance in community settings. Much of the document consists of attachments including the specific reports for studies in the three designated research areas, the two procedural manuals, and a program analysis form. Contains 34 references. (DB)

THE UNIVERSITY OF UTAH

THE IMPROVING COMMUNITY-BASED INSTRUCTION PROJECT

SCHOOL AND COMMUNITY INTEGRATION PROGRAM
DEPARTMENT OF SPECIAL EDUCATION
UNIVERSITY OF UTAH
SALT LAKE CITY, UTAH

FUNDED THROUGH THE
U. S. DEPARTMENT OF EDUCATION
SPECIAL EDUCATION PROGRAMS

FINAL REPORT
DECEMBER, 1987

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PROJECT OVERVIEW

Purpose

The Improving Community-Based Instruction (ICI) Project was funded in 1985 by the Office of Special Education and Rehabilitative Services, U.S. Department of Education. The purpose of the ICI Project was to conduct research that would improve the effectiveness and efficiency of training in community settings with individuals with severe disabilities. Three areas of instruction were examined including: (1) the influence of the location of instruction on the acquisition and generalization of community activities; (2) strategies for establishing reliable stimulus control of student responses in community settings, and (3) strategies for building performance of complex chains of behavior.

The results of the studies completed by the ICI Project were synthesized and complied in two procedural manuals that were designed to assist practitioners in developing community and classroom-based instructional programs. These manuals were field-tested with teacher candidates in the area of severe disabilities and with teachers working in classrooms for students with severe disabilities. The results of the field-test were used to finalize procedures incorporated in each manual.

Finally, the results of the ICI Project have been broadly disseminated. Dissemination activities have included: (1) publication of five research reports summarizing the results of studies completed by ICI Project staff, (2) submission of one additional manuscripts for publication in a professional journal, (3) direct mailing of 70 reprints of research reports to practitioners and researchers in the United States and Europe, (4) presentations at 5 national, regional, and state professional conferences, (5) inservice training workshops for approximately 350 teachers of students with severe disabilities nationally on community-based instruction, and (6) preservice training for 40 teacher candidates in the area of severe disabilities at the University of Utah on the design and implementation of instruction in community settings.

Research Focus of the ICI Project

Within the last decade the expected outcomes of service programs for individuals with severe disabilities has shifted from providing safe and humane care, to creating opportunities for there individuals to participate as full members of the community (Brown, Neitupski, & Hamre-Neitupski, 1976; Wilcox & Bellamy, 1982). This shift in expected outcomes has led to a significant restructuring of educational and social service programs nationally (Will, 1984). One area of service delivery that has been impacted the most by these changes is the content and structure of curriculum used by educational and social service agencies (Brown, et al, 1978; Wilcox & Bellamy, 1987).

Historically, instructional targets for individuals with severe disabilities have been based on academic and developmental skill sequences (Brown, et al, 1979; Wilcox & Bellamy, 1987). These curricula were designed to teach individuals the "prerequisite" skills necessary to be successful in employment, residential, and other community settings. Unfortunately, these approaches have not been effective in preparing young adults who are graduating from high school for life in the community (Hasazi, Gordon, & Roe, 1986; Pumpian, et al, 1984; Wehman, Kregel, & Seyfarth, 1986). They have also had limited success in preparing adults with severe disabilities to enter less restrictive employment and residential programs (Bellamy, Rhodes, Bourbeau, & Mank, 1986; Brunicks & Lakin, 1985).

Recent attempts to design curricula that more effectively prepare individuals with severe disabilities for life in the community have stressed the need for training to focus on the employment, personal management, and leisure activities available within the local community (Bates, 1986; Brown, et al, 1979; Wilcox & Bellamy, 1987). An important feature of this curriculum approach is that a significant amount of training is conducted in actual performance settings. This is based on recent research that has shown that individuals with severe disabilities do not readily generalize performance from training to nontraining settings (Bates, 1980; Koegel & Rincover, 1976; McDonnell, Horner, & Williams, 1984; McDonnell & Horner, 1986; Nietupski, et al, 1986; Sprague & Horner, 1985; Stokes & Baer, 1979). It has become increasing clear that if programs are to be successful in preparing individuals with severe disabilities to participate in the community, they must provide significant amounts of training in those environments in which individuals will be expected to perform.

Unfortunately, training in community settings is plagued by a variety of technical and logistical difficulties. Among the most problematic are the trainer's loss of instructional control and the increased staff time and resources necessary to carry out training in these settings. These two variables often combine to reduce the overall effectiveness and efficiency of instruction.

Although a number of strategies have proven to be effective in teaching community activities to individuals with severe disabilities, there are very few studies that have examined the relative efficacy of these strategies (Neitupski, et al, 1985; Snell & Browder, 1986). As a result, practitioners have been left to their own intuition and experience in selecting instructional strategies for training community activities. This often leads to ineffective and inefficient use of program resources. The end result is that the opportunities for individuals with severe disabilities to participate in the community are restricted. What is needed, are empirically validated guidelines that can assist practitioners to select instructional strategies that will not only be effective but also minimize the instructional time and resources necessary to establish reliable performance.

A second area of concern is the limited experience that many practitioners have in carrying out instruction in community settings. The preservice training programs of most practitioners working in the field today focused almost exclusively on teaching discrete academic or developmental skills in classroom settings. As such, many these of individuals are unable to design instructional programs that can accommodate the demands of community-based instruction. There is a pressing need to develop support materials that can assist practitioners to apply their knowledge of instructional procedures designed for classroom settings in teaching complex chains of behavior in actual performance environments.

Project Objectives

Objective 1.0: Conduct research studies on the impact of the location instruction on the acquisition and generalization of community activities.

Objective 1 focused on the impact of the "location of instruction" on the acquisition and generalization of community activities. Two specific variables were examined. The first was the influence of classroom-based instruction on student performance in community settings. The second variable examined was the impact of various strategies for sequencing instructional examples on the acquisition and generalization of community activities.

Objective 2.0: Conduct research studies on strategies for establishing stimulus control by natural task stimuli in community settings.

Three strategies have been suggested as methods for establishing control of students response by natural task stimuli. These include the system of least to most prompts, the system of most to least prompts, and time delay (Billingsley & Romer, 1984; Woolery & Gast, 1984). Although each strategy has proven to be effective in establishing performance of community skills by individuals with severe disabilities, studies which have assessed the relative effectiveness or efficiency of these strategies are not available (Billingsley & Romer, 1984; Woolery & Gast, 1984; Snell & Browder, 1986). This objective focused on conducting research that compared the relative efficacy these strategies in establishing performance of community activities.

Objective 3.0: Conduct research studies examining the impact of various chaining strategies on the acquisition and maintenance of community activities.

Three strategies have been suggested as methods for developing performance of complex chains with individuals with severe disabilities. These strategies include forward chaining, backward chaining, and whole task instruction (Spooner & Spooner, 1984). Each of these strategies has been used successfully to teach community activities to individuals with severe disabilities. However, little research exists examining the relative effectiveness and efficiency of these strategies (Snell & Browder, 1986). Under this objective a series of research studies were completed that examined the effectiveness and efficiency of forward chaining, backward chaining, and whole task instruction in teaching community activities to students with severe disabilities.

Objective 4.0: Develop procedural manuals that will assist practitioners to design instructional programs to teach community activities.

The focus of this objective was to develop support materials that could assist practitioners to design training programs that would lead to reliable performance by individuals with severe disabilities in community settings. The ICI Project developed and field-tested two procedural manuals that were designed to accomplished this goal. The procedures incorporated in these manuals were based on a review and synthesis of the research completed by the

ICI Project and other research programs focused on teaching community activities to individuals with severe disabilities. The effectiveness of the manuals were assessed through a direct field-test using experienced and unexperienced teachers. The manuals were revised based on the feedback provided by teachers and an analysis of the programs they developed during the field-test.

Objective 5.0: Disseminate research results and guidelines.

The final objective of the ICI Project was to ensure that the results of the research and the products developed by project staff were made available to other professionals who work with individuals with severe disabilities. A variety of methods were to disseminate the results of research and other products including submission of articles for publication in professional journals, presentations at professional conferences, and direct dissemination of products.

PROJECT ACTIVITIES AND ACCOMPLISHMENTS

This sections will describe the activities and accomplishments of the ICI Project. These activities and accomplishments will be presented by objective.

Research on the Impact of Location of Instruction

The ICI Project proposed to conduct a series of single subject research studies focused on the influence that the location of instruction had on the performance of students with severe disabilities in community settings. Two studies were completed. The first compared the efficacy of a combined strategy of classroom-based instruction and community-based instruction with training only in community settings. The second study compared two strategies for sequencing the introduction of community training sites for individuals with severe disabilities. The design and results of each of these studies is briefly described below. More complete reports for each of these studies are presented in Attachment A.

A comparison of combined classroom and community-based instruction and training only in community settings. This study compared the relative efficacy of a combined strategy of classroom-based instruction and community-based instruction with training only in community settings. It extended previous research which compared the relative efficacy of training only in classroom settings with combined strategies of classroom and community-based instruction (Haring, Kennedy, Adams, & Pitts-Conway, 1987; McDonnell & Horner, 1986; McDonnell, Horner, & Williams, 1984). These studies have shown that the combined strategy is superior to classroom instruction alone.

In this study six students with severe disabilities were taught to use fast food restaurants through either combined or community training strategy. Both instructional packages were designed to maximize generalization of trained skills by systematically selecting instructional examples that sampled the range of stimulus and response variation found in fast food restaurants in the community in which the students lived (Horner, Sprague, & Wilcox, 1982). In the combined strategy, the range of stimulus variation that would be encountered by students in fast food restaurants was presented via slides of counters and cash registers in a classroom simulation. Students were provided instruction on the responses necessary to complete the fast food activity in one restaurant located near their school. Classroom and community-based instruction were alternated across training sessions. In the community training strategy students were exposed to stimulus and response variation by providing training in three different fast food restaurants.

The relative efficacy of these two strategies was assessed in a two-level multiple baseline across subject design (Hersen & Barlow, 1984). Acquisition and generalization of performance was measured in three nontrained fast food restaurants. These restaurants were selected to ensure that they sampled the range of variation that would normally be encountered by students in completing the fast food activity in their home community (Horner, et al, 1982). The results showed that both the combined strategy and community training resulted in reliable performance of the fast food activity. However, students who had received community training learn to perform in fast food restaurants more quickly than students who had received the combined training strategy. In addition, students who had received the community training were less likely to make generalization errors than students who had received the combined training strategy.

This study suggests that whenever possible practitioners should conduct training in the settings in which individuals will be expected to perform. This approach will generally be more efficient in terms of actual training time and trials to criterion. In addition, training in community settings is less likely to lead to generalization errors by students. Use of classroom-based instruction should only be considered when training in community settings is not logistical feasible. When practitioners do used classroom based instruction, it should be designed to sample the range of variation that will be presented to the student and to utilize materials that approximate the conditions found in the performance settings as closely as possible.

A comparison of serial and concurrent sequencing strategies. This study compared the relative efficacy of serial and concurrent sequencing strategies in teaching performance of a grocery item location strategy to six students with severe handicaps. Serial sequencing has been used extensively in curriculum for students with severe handicaps (c.f., Fredericks, et al, 1978). However, some researchers have suggested that the serial sequencing strategy does not allow for sufficient practice of previously learned skills and may increase the likelihood of generalization errors (Englemann & Carnine, 1984; Horner, et al, 1982; Pancsofar & Bates, 1985). The relative efficacy of serial and concurrent sequencing strategies in teaching community activities has not been examined, although previous research on teaching discrete academic tasks has favored the concurrent sequencing strategy (Guess, Holvett, & Helmstetter, 1982).

In this study six students with severe disabilities were taught to locate ten grocery items in groceries stores in the community in which they lived. Students were taught the item location strategy in three different stores. These stores were selected to systematically sample the range of stimulus and response variation that they would encounter in stores that were available in their home community (Horner, et al, 1982). In the serial sequencing strategy, students were trained to implement the item location strategy one store at a time. In other words, the student was trained in one store until they met criterion, then they were trained in the second store and so on until they had received training in all three stores. The order of introduction of the stores was randomized across students to prevent potential ordering effects. In the concurrent strategy students received training in all three stores simultaneously. The stores in which students received training was varied across instructional sessions.

The efficacy of these two strategies was assessed in a two-level multiple baseline across subject design (Hersen & Barlow, 1984). Acquisition and generalization of the item location strategy was measured in three nontraining stores that were selected to sample the range of stimulus and response variation that students would be likely to encounter in completing grocery shopping in their community (Horner, et al 1982). The results showed that the concurrent sequencing strategy resulted in better generalized performance in nontrained stores. In addition, there were no substantial differences between the two strategies in terms of the amount training required to meet the designated training criterion.

This study suggests that when the number of community sites in which an individual must perform is relatively small, that the efficacy of training is enhanced if they are taught to perform the activity in all sites simultaneously. Attempts by practitioners to reduce the complexity of the task by using a serial sequencing strategy maybe unnecessary and may in fact increase the likelihood of generalization errors.

Summary. The completion of these two studies provides insight into the relative influence that the location of training can have on the design of community training programs. However, these studies are only an initial effort to address this very complex issue. Additional research will be need to provide clear guidelines to practitioners. Some of the areas for future research on this issue should include (1) the potential impact of classroom-based instruction on the maintenance of performance in community settings, (2) a comparison of concurrent and cumulative sequencing strategies in the acquisition and generalization of community skills, and (3) the impact of tandem sequencing strategies within the same instruction activity in order to control the introduction of training sites and task to students.

Research on Strategies for Establishing Stimulus Control in Community Settings

The ICI Project proposed to conduct a series of single subject research studies on the relative efficacy of commonly recommended response prompting and fading procedures in establishing performance in community settings. A total two studies were completed. The first compared the relative efficacy of an increasing prompt hierarchy and a constant time delay procedure. The second compared the relative efficacy of a decreasing prompt hierarchy and a constant time delay procedure. The design and results of these studies are briefly described below. Comprehensive research reports for each of these studies are presented in Attachment B.

A comparison of an increasing prompt hierarchy and a constant time delay procedures. This study examine the relative efficacy of an increasing prompt hierarchy and a constant time delay procedure in teaching the use of a fast food restaurant and a convenience store to students with severe disabilities. The increasing prompt hierarchy strategy has been the most frequently reported strategy in teaching community activities to individuals with severe disabilities (Cuvo, et al, 1978; Gaule, Nietupski, & Certo, 1985; Schleien, Wehman, & Kiernan, 1985). The strategy is design to provide increasing levels of assistance to the student following an error until they perform the target response correctly. Despite its popularity with researchers, its use with students with severe disabilities has been questioned because it sometimes leads to prompt dependency (Bellamy, Horner, & Inman, 1979; Csapo, 1981; Snell & Browder, 1986; Wolery & Gast, 1984). In addition, comparative studies have not found the increasing prompt hierarchy to be as effective or efficient as antecedent response prompting strategies that are designed to prevent student errors during acquisition (Csapo, 1981; Day, 1986).

Time delay has been suggested as a potential alternative to the increasing prompt hierarchy because it is designed to reinforce self-initiation of responses by students in natural performance settings (Halle, Marshall, & Spradlin, 1979; Kliewert & Gast, 1982; Snell, 1982). The time delay strategy is structured to provide assistance to the student prior to the response and to fade the assistance by gradually increasing the time period between the presentation of the task stimulus and the trainer's prompt (Woolery & Gast, 1984). However the application of the most common time delay procedure, the progressive time delay, to chain behavior has been extremely limited because of its complexity (Woolery & Gast, 1984). An alternative strategy to the progressive time delay, called a constant time delay procedure, has been recommended for teaching chains of behavior (Snell, 1982; Woolery & Gast, 1984).

To date however there has been no direct comparison of the increasing prompt hierarchy and the constant time delay procedure in teaching community activities to individuals with severe handicaps. This study was designed to extend the existing research base by comparing the relative efficacy these two strategies in teaching community activities and by further testing the effectiveness of the constant time delay procedure in teaching chained behavior.

In this study four students with severe disabilities were taught to purchase snack items in a fast food restaurant and convenience store. Students were taught to purchase items in one setting using the increasing prompt hierarchy and the constant time delay procedure in the other setting. The interventions and settings were counterbalanced across students to prevent possible task by treatment interactions.

The efficacy of the two strategies was assessed through an alternating treatment design (Tawney & Gast, 1984). Acquisition of the purchasing skill was measured in experimental probe sessions conducted at the beginning of every third instructional session. The results showed that both strategies were effective in establishing performance of the purchasing skill but that the constant time delay procedure was far more efficient. In addition analysis of performance errors during probe sessions, indicated that students were more likely to wait for a prompt from the trainer when they encountered a difficult step when they received increasing prompt hierarchy training than when they received time delay training.

This study suggests that the use of a constant time delay strategy is an effective and efficient means to establish stimulus control in community settings. In addition, it confirms the results of other research studies which have suggested that the use of antecedent response prompting and fading procedures are more effective than consequence strategies for individuals with severe handicaps.

<u>A comparison of a decreasing prompt hierarchy and a constant time delay procedure</u>. Previous research on response prompting and fading strategies with individuals with severe disabilities has suggested that practitioners should utilize strategies that are designed to prevent errors during acquisition (Csapo, 1978; Day, 1987; McDonnell, 1987; Woolery & Gast, 1984). The two most

common antecedent strategies include the decreasing prompt hierarchy and the time delay procedure. The decreasing prompt hierarchy is designed is to provide assistance to the student prior to their response. The trainer fades prompts by reducing the level of assistance provided to the student across instructional trials and/or sessions. The time delay procedure also is designed to provide assistance prior to the student's response however, in the time delay procedure the trainer fades assistance by increasing the time period between the presentation of the task stimulus and their prompt. No attempt is made to reduce the level of assistance provided to the student. Both the decreasing prompt hierarchy and constant time delay procedures have been used to teach a variety of community activities to individuals with severe disabilities (Cuvo & Davis, 1983; McDonnell, 1987; Snell, 1982). However, there have been no direct comparisons of the relative efficacy of these two strategies in teaching community skills to individuals with severe disabilities.

This study was designed to extend the existing research base comparing the relative efficacy of a decreasing prompt hierarchy and a constant time delay procedure in teaching four students with severe disabilities to withdraw money from a bank by using an Automatic Teller Machine or by writing checks for cash. Students were taught to complete one task with one prompting strategy and taught to complete the other task with the second prompting strategy. The tasks and prompting strategies were counterbalanced across students to prevent possible interaction effects.

The efficacy of the two strategies were assessed through an alternating treatment design (Tawney & Gast, 1984). Probes conducted at the beginning of every second instructional session were used to measure acquisition of the two tasks. The results of the study indicate that both strategies led to the acquisition of the two banking tasks. However, the decreasing prompt hierarchy was substantially more efficient in terms of training time and trials to criterion. In addition, trainers involved in the study reported that the constant time delay procedure was more difficult to use than the decreasing prompt hierarchy.

This study suggests that practitioners should utilize a decreasing prompt hierarchy in training community skills. This strategy appears to be more efficient in establishing reliable performance and also appears to be easier to use in community settings.

Summary. These two studies confirm that response prompting and fading procedures that prevent errors during acquisition are more efficient with students with severe disabilities than strategies which are designed to provide assistance following an error. Although the decreasing prompt hierarchy and the time delay procedure are effective in establish stimulus control in community settings, the decreasing prompt hierarchy appears to be more efficient and easier for inexperienced trainers to use. Additional research is needed to develop guidelines that can assist practitioners to select appropriate response prompting procedures. Some of the areas of research that would be most beneficial include: (1) a comparison of the relative effectiveness of the progressive time delay and constant time delay procedures, (2) validation of decision rules for matching the topography of prompts used during training to the learning characteristics of the student and the features of the task, and (3) a comparison of response prompting and fading procedures that fade assistance to students within single sensory modality across trials or sessions (i.e., physical assistance, physical prime, verbal prompt, etc.) with those that "blend" prompts and fade assistance by changing the modality and/or reducing the number of prompts provided to the student in each trial or session (i.e., physical assistance plus a direct verbal, physical prime plus a direct verbal prompt, etc.).

<u>Research on Strategies for Building Performance of Complex Chains</u>

The ICI Project proposed to conduct a series of single subject research studies examining strategies for building complex chains of behavior in community settings. Three commonly recommended chaining strategies were compared in two different studies. The first study compared the relative efficacy of a forward chaining strategy to whole task instruction. The second, compared the relative efficacy of a backward chaining strategy to whole task instruction. The design and results of these studies are described briefly below. More comprehensive reports on these two studies are presented in Attachment C.

<u>A comparison of forward chaining and whole task instruction</u>. This study compared the relative efficacy of forward chaining and whole task instruction in teaching laundromat skills to students with severe disabilities. Both the forward chaining and whole task strategies have been used to teach a variety of community activities to individuals with severe disabilities (Bunker & Moon, 1983; Nietupski, Hamre-Nietupski, & Ayres, 1984; Snell & Browder, 1986). Unfortunately, there has been virtually no systematic comparison of these two strategies. Forward chaining has been recommended as way of reducing the overall complexity of the learning task for individuals with severe disabilities (Sailor & Guess, 1983). However, the efficiency of forward chaining has been contested since its structure may lead to redundant and unnecessary training on individual steps of the chain (Gaylord-Ross & Holvet, 1985; Snell, 1983; Wilcox & Bellamy, 1982). This study was designed to examine this issue.

Four students with severe handicaps were trained to use a commercial washing machine and soap vending machine in a laundromat located in the community in which they lived. Students were trained to complete one task using one of the chaining strategies and taught to complete the second task using the other chaining strategy. The tasks and chaining strategies were counterbalanced across students to prevent possible task by treatment interactions.

The relative efficacy of the forward chaining and whole task strategies was assessed in a alternating treatment design (Tawney & Gast, 1984). Acquisition of the tasks was measured via experimental probes conducted at the beginning of every third instructional session. Maintenance of the two tasks was measured in two follow-up probes conducted four and eight weeks following termination of training.

The results showed that both strategies led to reliable performance of the tasks. However, the whole task strategy was far more efficient in terms of the number of training trials required for students to meet criterion. Analysis of student errors during experimental probes indicated that the forward chaining strategy did in fact lead to redundant teaching of previously mastered steps in the chain.

This study suggests that students with severe disabilities can learn to perform complex skills through whole task instruction and that it may be unnecessary for practitioners to control the introduction of chain steps for many students. In addition, use of the forward chaining strategy may increase the amount of time required to establish performance of community activities because its structure leads to redundant teaching of previously learned chain steps.

A comparison of backward chaining and whole task instruction. This study compared backward chaining and whole task instruction in teaching four adults with severe disabilities to purchase snack items in a fast food restaurant and a supermarket. Both the backward chaining and whole task strategies have been used to teach community activities to individuals with severe disabilities (Nietupski, et al, 1984; Snell & Browder, 1986). However, there has been no direct comparison of their relative efficacy in developing performance of community activities. This study was designed to provide an initial comparison of these strategies.

Four adults with severe disabilities were trained to purchase snack items in a fast food restaurant and a supermarket located near their group home. Individuals were taught to use one setting with one of the chaining strategies and taught to use the second setting with the other strategy. The settings and chaining strategies were counterbalanced across study participants to prevent potential task by treatment effects.

The efficacy of the two strategies was assessed through an alternating treatment design (Tawney & Gast, 1984). Acquisition of the tasks were measured in experimental probes conducted at the beginning of third instructional session. Maintenance of performance was assessed two, four, and six weeks following termination of training.

The results showed that both strategies led to reliable performance in the restaurants and supermarkets. No significant differences were found between the two strategies in terms of their relative efficiency in producing reliable performance. However, follow-up probes of performance maintenance tended to favor the whole task strategy.

This study suggests that it may be unnecessary for practitioners to attempt to control the introduction of chain steps to individuals with severe disabilities. Whole task instruction is equally effective and efficient in producing reliable performance of community activities.

Summary. These two studies highlight the effectiveness of whole task instruction in teaching community activities to individuals with severe disabilities. This an important finding since researchers have generally recommended that practitioners use serial chaining strategies to students with severe disabilities (Sailor & Guess, 1983). In addition, many commercial curriculum have utilized either the forward or backward chaining strategies in their teaching formats (c.f., Fredericks, et al 1979). It would it appear based on the results of these two studies that practitioners should use whole task instruction unless the student is not progressing satisfactorily toward mastery of the activity. In this situation, the practitioner may need to control the introduction of chain steps to the individual. These studies would suggest that the backward chaining strategy would be a more effective and efficient than the forward chaining strategy in establishing reliable performance.

There is a critical need to continue research on strategies for establishing performance of complex chains in community settings. Some of the variables that need further examination include (1) the potential interaction between the efficacy of various chaining strategies and task complexity and chain length and (2) the influence of massed practice on difficult steps of the chain on increasing the efficiency whole task instruction.

Develop Procedural Manuals for Practitioners

A major area of activity for the ICI Project was to develop and field-test a procedural manual that would assist practitioners to design instructional programs to teach community activities. The result of this development and field-testing effort is described below.

Development of procedural manuals. ICI Project staff developed two procedural manuals focused on the design of instructional programs to teach community activities. Copies of these manuals are presented in Attachment D. The first manual is entitled "Design of Community-based Instruction" focuses on the decisions and procedural steps necessary for practitioners to design programs for training in actual performance environments. The manual addresses all components of community-based training programs including: (1) conducting an analysis of activity demands, (2) selecting sites and tasks for training, (3) sequencing training sites and tasks, (4) selecting a chaining strategy, (5) selecting response prompting and fading strategies, and (6) designing collection systems. Decisions and procedural steps are presented in a decision tree format that guides practitioners through each step in the development of the instructional program. Illustrative forms are provided to assist practitioners in the implementation of the training program.

The second manual is entitled "Design of Classroom-based Instruction" and focuses on the decisions and procedural steps necessary to design classroom-based instruction that will improve student performance in community settings. The manual addresses all of the components of an effective classroom-based program including: (1) conducting an analysis of the target skill, (2) selecting training tasks, (3) sequencing training tasks, (4) selecting response prompting and fading procedures, and (5) designing data collection systems. The manual presents the decisions and procedural steps in a decision tree format that guides the practitioner through each step in developing the program. In addition, illustrative forms are provided to assist practitioners in the implementation of the training program.

Field-testing of the procedural manuals. The procedural manuals were sent to ten teachers currently working in secondary programs for students with severe handicaps and ten teacher candidates enrolled in the certification program in severe handicaps at the University of Utah. These individuals were selected in order to sample the range of knowledge and expertise of teachers in secondary programs for students with severe handicaps. The number of years in which these individuals had been teaching in secondary programs for students with severe handicaps ranged from 0 to 10 years. Each of these individuals was asked to develop one program using either the community-based or classroom-based procedural manual. No other assistance or direction was provided to the individuals in using the manuals.

Seven (70%) of the experienced teachers developed programs using community-based procedural manual. Three (30%) of the experienced teachers choose not to participate in the field-test. None of the experienced teachers used the classroom-based procedural manual. Ten (100%) of the teacher candidates developed programs using the community-based procedural manual and six (60%) used the classroom-based procedural manual. The seventeen field-test participants developed a total of 22 instructional programs.

The effectiveness and utility of the procedural manuals was assessed in two ways. First, each program developed by the participates underwent a product analysis. This analysis was structured to outline the critical elements of community-based and classroom-based instructional programs (see Attachment E). Each program was examined to determine if the element was present or not present. This information was used to calculate a percentage score of the number of procedural elements present in the programs submitted by participants.

The second measure assessed the level of satisfaction of the participants with the design and structure of the manuals. Participants were asked to rate of the adequacy of the directions provided in the manuals, the adequacy of the examples provided in the manuals, and the overall utility of manuals.

Table 1 presents the results of the product analysis conducted on programs submitted by participants. Close examination of Table 1 indicates that both the experienced teachers and teacher candidates were able to successfully use the procedural manuals to develop community-based instructional programs. In addition, teacher candidates were able to successfully use the classroom-based procedural manual to develop simulations of community activities.

Although statistical analyses were not conducted, two general tends in the teachers' use of the manuals were observed by ICI Project staff. First, it appeared that the teachers who were most successful in using the manuals were those who had consistently used data based instructional programs in teaching discrete academic or developmental skills in their classrooms. Those teachers who typically did not use data based programs in their classrooms were less successful in using the procedural manuals. Second, those teachers who regularly developed their own instructional programs rather than relying on commercial curriculum were typically more successful in using the manuals than those teachers who used commercial curriculum.

Table 1

Percent of Elements Present in Submitted Programs

	Community-Based Manual			Classroom-Based Manual		
Group	n	Mean	Range	n	Mean	Range
Experienced Teachers	7	73.5	44 - 94		—	—
Teacher Candidates	10	84.2	44 - 100	6	87.6	75 - 100

In addition, the teacher candidates were generally more successful in using the manuals than the experienced teachers. This also appeared to be related to their overall "comfort level" in using data based programs and designing their own instructional programs for students. This outcome is not surprising however, since the teacher training program at the University of Utah in severe handicaps emphasizes these tools/skills in its curriculum.

Table 2 presents the results of the participant's evaluation of the procedural manuals. As indicated by the Table the vast majority of participants felt that the manuals were easy to use and aided their development of community-based and classroom-based instructional programs. The overall satisfaction of participants with the manuals are illustrated by these comments:

> "Overall the manual reads well, is very informative, and gives good clear instructions."

> "The process was easy to follow and when various steps and data forms are completed according to the program, I feel I will have a better base for decision making and improvement in data accuracy."

> "The descriptions and examples were very helpful, especially for someone who is not familiar with writing programs."

Dissemination of ICI Results and Products

The ICI Project has been made significant efforts to disseminate the results of research studies and products. These activities have included submitting research reports to professional journals, presentations at professional conferences, workshops for teachers and other practitioners, and direct mailing of products to interested parties. The specific activities completed by the ICI Project in each of these areas will be discussed below.

Submission of research reports for publication. Table 3 presents the status of research reports submitted by ICI Project staff for publication in professional journals. Close examination of Table 3 shows that the ICI Project staff have three research reports currently in press, two research reports accepted for publication, and one report currently under review. Research reports have been published in, or accepted for publication by, The Journal of The Association for Persons with Severe Handicaps, Research in Developmental Disabilities, Education and Training of the Mentally Retarded, and The Journal of Applied Behavior Analysis.

Presentations at professional conferences. ICI Project staff have made presentations at five national, regional, and state professional conferences. A total of 71 professionals have attended these presentations. Table 4 outlines the specific titles of the presentations, the professional conference at which the presentation was made, and number of individuals attending each presentation. In addition to these presentations, a proposal has been submitted for review for the Annual Conference of the Association of Applied Behavior Analysis.

Table 2

Participant Evaluations of the Procedural Manuals

Question/Response	Experienced Teachers Community	Experienced Teachers Classroom	Teacher Candidates Community	Teacher Candidates Classroom
1. The directions and examples were clear.				
Yes	6	-	10	6
No	1	-	0	0
2. The forms provided in the manual were easy to use.				
Yes	6	-	10	6
No	1	-	0	0
3. The overall structure of the manual was easy to follow.				
Yes	6	-	10	6
No	1	-	0	0

Table 3

Status of Research Reports

Study	Status			
	Draft	Under Review	Accepted	Published
A Comparison of General Case InVivo and General Case Simulation plus InVivo Training				X
A Comparison of Serial and Concurrent Chaining Strategies		X		
A Comparison of Increasing Prompt Hierarchy and Constant Time Delay Procedures				X
A Comparison of Decreasing Prompt Hierarchy and Constant Time Delay Procedures			X	
A Comparison of Forward Chaining and Whole Task Instruction				X
A Comparison of Backward Chaining and Whole Task Instruction			X	

Table 4

Presentations at Professional Conferences

Title	Organization	Date	Number of Persons
Developing Community-Based Programs	American Association on Mental Deficiency Region IV Annual Conference	10/88	3
Selecting Assistance Strategies for Training in Community Settings	Utah Council for Exceptional Children	3/88	15
Considerations in Training Community Activities	Utah Council for Exceptional Children	10/87	13
Building Complex Chains in Community Settings	The Association for Persons with Severe Handicaps	10/87	20
Community-referenced Programming for Individuals with Severe Handicaps	Residential Services Conference - Ellensberg, WA	10/87	20

Workshops for practitioners. In addition to presentations at professional conferences, ICI Project staff have been asked to conduct five different workshop for teachers and other professionals. The total number of individuals who attended these workshops was 350. Table 5 presents the title of each workshop, the location of the workshop, and the number of persons attending.

Direct mailing of research reports and products. The ICI Project has also directly distributed research reports and other products to professionals both within the United States and Europe. Reprints of published research have been mailed to 52 professionals from 22 different states. In addition, reprints of published articles have been mailed to 6 different professionals from Great Britain, Belgium, France, Germany, and Poland. Table 6 summarizes the type and number of materials disseminated by the ICI Project.

Table 5

Workshops Provided by ICI Project Staff

Title	Location	Date	Number of Persons
Developing Community-based Instructional Programs	Bountiful, UT	11/88	10
Community-based Instruction for Students with Severe Handicaps	Kalamazoo, MI	6/88	132
Developing Community-based Instructional Programs	Salt Lake City, UT	6/88	50
Design of Community-based Instruction	Lansing, MI	5/88	108
Developing Community-based Vocational Programs for Adults with Severe Disabilities	Salt Lake City, UT	10/87	25
Community-based Programming for Students with Severe Handicaps	Spearfish, SD	6/86	25

Table 6

Materials Disseminated to Professionals

Type of Material	Number Distributed
Reprints of Published Research Reports	58
Reprints of Unpublished Research Reports	12
Procedural Manuals	28
Forms and Other Support Material	95

Conclusion and Recommendations

The rapid expansion of community-based training in secondary and social service programs nationally has created a critical need for empirically validated guidelines for the design and implementation of instructional programs. Without future research in this area the potential benefits of community-based training for individuals with severe disabilities may not be fully realized. Although the ICI Project has provided initial information on guidelines and procedures that can be readily disseminated to practitioners, additional research and development activities are needed. Some these activities include:

1. Comparative research on commonly recommended instructional strategies in order to identify a core of procedures that will maximize the effectiveness and efficiency of training in community settings. Some the areas which should be examined include comparisons of strategies for selecting of instructional examples to ensure generalization of performance (i.e., General Case Programming, Best-Exemplar, etc.), comparisons of various strategies for sequencing of training sites and instructional tasks, comparisons of various strategies used to schedule the frequency and trial density of community-based instructional programs, and examination of the task variables that influence acquisition of chains of behavior by individuals with severe disabilities.

2. Examination of strategies that will allow effective disseminate technology to practitioners. Additional efforts are needed to identify strategies that will lead to the adoption of validated techniques and strategies by practitioners currently working in secondary and social service programs for individuals with severe disabilities.

3. Research on instructional strategies that will enhance maintenance of performance in community settings. A critical outcome of community-based instruction is maintenance of performance over long periods of time. Despite the importance of performance maintenance there has been extremely little systematic research conducted examining this issue (Horner, Dunlap, & Koegel, 1988; Stokes & Baer, 1977). If the efforts to provide effective and efficient instruction in community-settings are to have their full benefit, training programs must be designed to ensure that the individual can maintain performance without significant support or retraining.

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Attachment A

Research Reports for Studies Examining the
Impact of the Location of Instruction
on Performance in Community Activities

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A Comparison of General Case In Vivo and General Case Simulation Plus In Vivo Training

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This study examined the relative effectiveness and efficiency of general case in vivo and general case simulation plus in vivo training in teaching six students with moderate and severe disabilities to purchase drink and food items in fast-food restaurants. General case in vivo training consisted of instruction in three fast-food restaurants located near the students' school. General case simulation plus in vivo training alternated classroom training with training in a single restaurant. Generalization was assessed in three novel restaurants. Results indicated that both strategies led to reliable performance in nontrained settings. However, students who received general case in vivo instruction required fewer training trials to criterion, made fewer errors to criterion, and required less training time to criterion than students who received general case simulation plus in vivo training. In addition, the overall costs of general case in vivo instruction were lower than the costs of the general case simulation plus in vivo training. The results are discussed in terms of the implications for teachers in designing instructional programs to teach generalized performance of community skills.

DESCRIPTORS: community-referenced instruction, general case instruction, grocery purchasing, restaurant skills, simulation

A primary objective of educational programs for individuals with severe disabilities is the development of generalized performance of community activities (Brown et al., 1983; Sailor et al., 1986; Wilcox & Bellamy, 1982). Recently, general case programming has provided practitioners with a powerful procedural model for accomplishing this goal (Albin, Horner, Koegel, & Dunlap, 1987). General case programming provides a framework for identifying the range of stimulus and response variation across which students will be expected to perform and to select settings and examples for instruction (Horner, Sprague, & Wilcox, 1982). General case programming has proven effective in teaching a wide variety of vocational and community skills to individuals with severe handicaps (Horner, Albin, & Ralph, 1986; Horner, Eberhard, & Sheehan, 1986; Horner, Jones, & Williams, 1985; Horner & McDonald, 1982; Horner, Williams, & Stevely, 1987; Sprague & Horner, 1984).

Although general case programming provides an effective model for selecting instructional examples, the issue of how to best facilitate acquisition of community activities still remains unanswered (Snell & Browder, 1986). One ongoing problem for practitioners is determining how community-based and classroom-based instruction can be used to establish generalized performance in community settings (Horner, McDonnell, & Bellamy, 1986; Nietupski, Hamre-Nietupski, Clancy, & Veerhusen, 1985). At this point, best practice would suggest that natural environments provide the most powerful context for teaching generalized skills (Horner, McDonnell et al., 1986; Nietupski et al., 1986). This assumption is based on research indicating that isolated classroom-based instruction, or simulation, does not result in reliable performance in actual settings (Bates, 1980; Coon, Vogelsberg, & Williams, 1981; Marchetti, McCartney, Drain, Hooper, & Dix, 1983; McDonnell, Horner, & Williams, 1984).

For example, McDonnell et al. (1984) taught four high school students with severe disabilities to use an adapted money counting strategy in grocery stores, using flash cards, slides of cash registers, and a combined strategy of slide training and instruction in a single grocery store. Generalization was assessed in five grocery stores in the community. The study showed that neither flash card nor slide training resulted in functional performance in probe sites. Use of the payment strategy was not established until students were provided training in an actual grocery store.

Although simulation may not be effective as a primary strategy for establishing performance of community activities, the logistical and resource demands of

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community-based instruction have led several researchers to suggest that it may be used as a supplemental strategy to training in community settings (Horner, McDonnell et al., 1986; Nietupski et al., 1986; Sailor et al., 1986). In a recent study, McDonnell & Horner (1985) assessed the utility of simulation as a supplement to community-based training by comparing it with training in a single community setting. They trained eight high school students with severe handicaps to locate grocery items using two instructional strategies. In the first strategy, students were trained to locate grocery items in a single grocery store located near their school. The second strategy combined in vivo instruction with a simulation designed using general case programming procedures (Horner et al., 1982). During classroom-based training, students were taught to locate items on aisles and shelves via slides taken in actual grocery stores. Classroom training was alternated with in vivo instruction in a single grocery store. Generalization of grocery item selection was assessed in three novel grocery stores. The results showed that students who received the combined general case simulation plus in vivo training had higher levels of generalized performance in nontrained grocery stores than students who had received training in a single store. In addition, students who had received the combined general case simulation plus in vivo training required fewer training trials and hours of instruction to reach criterion than students who had received only in vivo instruction.

In a similar study, Haring, Kennedy, Adams, and Pitts-Conway (1987) taught three autistic adults to purchase items [illegible] in vivo instruction in a single grocery store in the community and a combined strategy of in vivo instruction and videotape modeling. Generalization of item purchasing was assessed in three novel stores; results showed that in vivo instruction combined with videotape modeling produced better generalized performance than instruction in a single grocery store in the community. Data on the relative efficiency of each strategy in establishing reliable performance was not reported.

These studies demonstrate that combining classroom-based instruction designed to sample the range of stimulus and response variation present in community settings with training in one community site is more effective in establishing generalized performance of community skills than training in a single in vivo setting. It remains unclear, however, whether this type of combined classroom and community training package is more effective than a strategy that teaches the range of stimulus and response variation solely in community settings. The current study was designed to address this issue. The relative effectiveness and efficiency of general case in vivo training and general case simulation plus in vivo instruction were compared in teaching six students with moderate and severe handicaps to purchase items in fast-food restaurants.

Method

Subjects

The six participants in the study attended an integrated junior high classroom and ranged in age from 11 to 14 years (mean = 12). Students' IQ scores ranged from 43 to 55 (mean = 44) as measured by the WISC-R. Participation in the study was based on four criteria: (a) The student could identify numerals 0 to 9, (b) the student could rote count to 10, (c) the student could count up to 10 items, and (d) the target training activity matched the scope of the student's existing individualized education program (IEP).

Activity

Students were to purchase food and drink items with values less than $5 in national and local hamburger fast-food chains. The steps of the activity included entering the lobby, approaching the counter, ordering, removing money from a purse or wallet, giving the cashier the correct amount of money, obtaining change, putting change away, waiting for the food order, obtaining the order, obtaining condiments or napkins, locating a seat, eating the order, and cleaning up and disposing of trash when finished.

All participants in the study lacked functional money skills. As such, they were taught an adaptive payment strategy to pay for purchases in the restaurants. This strategy, called the next dollar strategy, has three parts: (a) Identifying and saying the first number of the amount shown on a cash register, (b) saying the next higher dollar value, and (c) counting the number of one-dollar bills equal to the next dollar value (McDonnell et al., 1984).

Settings and Apparatus

The settings included the students' classroom, used for simulation training, three fast-food restaurants used as in vivo training sites (i.e., McDonald's, Hardee's, and Wendy's), and three different restaurants used as generalization probe sites (i.e., Arby's, Burger King, and Wienerschnitzel). Table 1 presents a comparison of relevant features of the simulation site, the in vivo training sites, and the generalization probe sites.

Simulation training materials included one carousel slide tray containing 40 color slides of cash registers with dollar values ranging between $.10 and $4.99 displayed on the register. The registers presented in the slides were located in the restaurants used as in vivo training sites.

Trainers

Two undergraduate students in special education served as trainers for the study. Each had previous experience working with individuals with severe disabilities. Trainers were provided with 2 hr of training on instructional and data-keeping procedures prior to the initiation of the study. The fidelity of trainer use of the

Table 1
Physical Features of the Generalization Probe Sites, In Vivo Training Sites, and Simulation Setting

Feature	Generalization probe sites			In vivo training sites			Simulation
	Site 1	Site 2	Site 3	Site 1	Site 2	Site 3	
Entrance	Double door on each side of lobby	Double door on one side of lobby	Double door on each side of lobby	Double door on each side of lobby	Double door on each side of lobby	Double door on each side of lobby	None
Counter	On left or right	On right	On left or right	On left or right	On left or right	On left or right	Table on left or right
Number of registers	2	3	1	6	2	1	1 displayed in slide
Type of display	Red electronic on screen above register	Red electronic on back of register	Green electronic on screen above register	Green electronic on back of register	Red electronic on back of register	Red electronic on screen above register	Slides with red and green electronic display on screen and back of register
Order location	At any open register	At any open register	Proceed through the switchback maze to order counter	At any open register	At any open register	Proceed through the switchback maze to order counter	Approach table
Order pick-up	Wait at counter	Wait at counter	Move to right to pick-up area	Wait at counter	Wait at counter	Move left to pick-up area	Wait at table or move to pick-up area
Condiment counter	On each side of lobby	Across lobby from registers	Across lobby from registers	Across lobby from registers	Across lobby from registers	Left of pick-up area	None
Location of trash	Near entrance	Near entrance	Under counter near entrance	Under counter near entrance	Near entrance	Near entrance	None

instructional procedures was assessed on a weekly basis throughout the course of the study.

Measurement

Four dependent measures used to evaluate the relative efficiency of general case in vivo and general case simulation plus in vivo training included (a) percentage of task analysis steps performed correctly during generalization probe sessions; (b) the frequency and topography of specific errors made by students during generalization probes; (c) the number of training trials, errors, and real time to criterion; and (d) the cost of each training condition.

Percentage of task analysis steps performed correctly during generalization probes. Student performance in nontrained fast-food restaurants was assessed during generalization probes. These three fast-food restaurant probe settings (i.e., Arby's, Burger King, and Wienerschnitzel) were selected using general case programming procedures (Horner et al., 1982). These sites were selected to represent the range of stimulus and response variation present in all fast-food restaurants in which the students would be expected to perform.

Generalization probes occurred across 2 consecutive days. Students were taken to two restaurants on the first day and the third restaurant on the second day. During probe sessions students purchased food and/or drink items in each of the three probe sites. The precise dollar amount and the number of items in each purchase made by students varied across sites. However, all students were required to make purchases in three separate value ranges during each probe. These included orders of less than one dollar, orders costing between $1.01 and $3, and orders costing between $3.01 and $5. These value ranges were randomly assigned to probe sites for each student prior to each probe session.

Each probe trial was initiated by providing the student with five $1 bills and the verbal cue "I want you to order ____." Students received no assistance or feedback during probe sessions; however, they were allowed to consume the item(s) they had purchased following the probe trial. Each task analysis step was scored as correct or incorrect. A response was scored correct if the student initiated the step within 5 s after the presentation of the task stimulus, and the step was completed correctly. If the step was not initiated within 5 s or was performed incorrectly, the trainer would complete the step for the student. The trainer then provided the cue "Okay, go on." This measure yielded a percentage score of all task analysis steps completed correctly across all value ranges and probe sites.

Topography and frequency of student errors. Task analysis steps across all probe sessions monitored the topography and frequency of student errors. This measure yielded a frequency count of each error by intervention across students and probes.

In vivo training trials and time to criterion. These measures were designed to assess the relative efficiency of the general case in vivo and the general case simulation plus in vivo strategies. The first measure was a simple frequency count of the number of training trials required for students to meet a training criterion of 100% correct completion of task analysis steps on two consecutive generalization probe sessions. For the general case in vivo group, this measure counted the total number of training trials to criterion in in vivo settings. For the general case simulation plus in vivo training group, this measure included the number of training trials to criterion in both simulation and in vivo settings. These data were summarized as the average number of training trials to criterion across students.

The second measure assessed the total amount of training time required for students to meet criterion. For the general case in vivo group, this measure included the total number of training minutes to criterion in in vivo settings. For the general case simulation plus in vivo training group, this measure included the total number of training minutes to criterion in both simulation and in vivo settings. These measures excluded travel time to and from the restaurants for training.

Costs of training. This measure was designed to assess the cost of each training strategy. It included the total staff, materials, and travel costs for carrying out general case in vivo training and general case simulation plus in vivo training. These data were summarized as the average cost per in vivo training trial and the average cost per instructional hour in each condition.

Procedures

Design. This study employed a two-level multiple baseline across subjects design (Barlow & Hersen, 1984). Students were randomly assigned to treatment conditions and baselines. The specific phases of the study were Baseline, Next Dollar Pretraining, General Case In Vivo Training, and General Case Simulation plus In Vivo Training.

Students were paired for the introduction of all treatment conditions. For example, following Baseline, Student 1 (general case in vivo) and Student 4 (general case simulation plus in vivo) entered the Next Dollar Pretraining condition simultaneously. When both Students 1 and 4 met the initial training criteria of 80% correct on all instructional trials on two consecutive training sessions in the Pretraining Condition, they entered their assigned general case training condition. Students 2 and 5 and Students 3 and 6 were similarly paired for the introduction of the treatment conditions. Training in the General Case In Vivo and the General Case Simulation plus In Vivo conditions was terminated when students correctly performed all of the steps of the task analysis across two consecutive generalization probe sessions.

Baseline. During Baseline probes student performance was assessed in each generalization probe site. Students were given five $1 bills and given the cue "I want you to buy ____." No feedback was provided to students for correct completion of task analysis steps. If students made an error on a step, the trainer completed the step for them and gave the cue "Okay, go on." Students were asked to make three purchases during each Baseline probe, one purchase from each of three targeted value ranges (i.e., .01 to $1, $1.01 to $3, and $3.01 to $5).

Next dollar pretraining. In order to ensure that any differential effects between general case in vivo and general case simulation plus in vivo training could be attributed to differences in the training strategies, all students received pretraining on the use of the next dollar strategy. During this phase students were provided in-class instruction on the next dollar strategy via flash cards. Values between .01 and $5 were written 7 cm high on 12.5-cm × 20-cm flash cards. Students were given five $1 bills. Each training trial was initiated by presenting a flash card to the student and providing a verbal cue such as "That'll be 2 dollars and 60 cents" or "Two sixty please."

Students were taught through a decreasing prompt hierarchy procedure a four-step "next dollar" strategy, which included orienting to the first number of the dollar value presented on the card, identifying the number, identifying the next higher number, and counting the number of ones equal to the higher number. Students were socially reinforced for correct completion of each step, with errors corrected through directions, modeling, and physical assistance.

Pretraining on the next dollar strategy was provided daily for 20 min. The training criterion for this experimental phase was 80% correct performance across all trials on two consecutive training sessions.

General case in vivo training. In vivo training occurred in three fast-food restaurants (i.e., McDonald's, Hardee's, and Wendy's). These restaurants, selected using general case programming procedures (Horner et al., 1982), differed from the restaurants used for generalization probes. Students received training in one restaurant each day and were required to purchase items from the three predetermined price ranges. The order of presentation of the restaurants was randomized across training sessions.

Students were trained to complete all activity steps during training; however, in order to reduce the costs of training, students only received actual food or drink items on the last trial of the training session. Arrangements were made with each restaurant for employees to provide empty containers to students on all other training trials. Performance of the activity was taught using a decreasing prompt hierarchy. Students were socially reinforced for correct completion of task analysis steps, with errors corrected through directions, modeling, and physical assistance.

Students received 20 min of instruction daily. The number of trials during each session varied, depending upon the number of errors made during the training session and the number of other community members in the restaurants.

General case simulation plus in vivo training. In this condition simulation training was alternated each day with training in a single in vivo site. Simulation training was designed according to general case programming procedures (Horner et al., 1982). The simulation was designed to ensure that (a) the range of stimulus and response conditions found in the actual performance settings were presented during each training session and (b) the stimulus and response conditions in simulation training approximated as closely as possible those found in the actual performance settings (Horner, McDonnell et al., 1986).

Each simulation training trial followed a specific sequence of steps designed to approximate those required in actual restaurants. In the first step, students were presented with the cue "I want you to order ____." Students then were required to approach the trainer, located behind a table, who presented a range of greetings and order requests to the student (e.g., "Good day. Can I take your order?" or "Hello, can I help you?"). Students then were required to present their order to the trainer. In the second step, the trainer presented a slide of a cash register to the student and made a verbal request for payment (e.g., "That'll be two sixty, please" or "Two dollars and sixty cents please"). Students were required to count out the correct amount of money needed to "pay" the amount presented on the slide using the next dollar strategy. The registers presented in the slides were those located in the restaurants used in general case in vivo training. Once the student had counted out the correct amount of money, the trainer gave the student change. In the final step, the trainer gave the student a tray containing an empty container for the food or drink item(s) ordered. Students were required to pick up the tray and move away from the table. All responses were taught using a decreasing prompt hierarchy. Students were socially reinforced for correct completion of task analysis steps, and errors were corrected via directions, modeling, and physical assistance.

In vivo training was provided to students on alternate sessions. Of the three restaurants used for general case in vivo training, the restaurant used for in vivo training was in closest proximity to the students' school. This site was used in order to approximate conditions faced by classroom teachers in carrying out community-based instruction when a range of in vivo training sites are not near the school. The training procedures used in this site were identical to those used with students who received general case in vivo training.

Both simulation and in vivo training sessions were 20 min long. The number of training trials presented during each session varied, based on the number of errors students made during training and the number of other community members located in the in vivo training site.

Fidelity of training procedures and interobserver agreement on probe trials. A weekly observation of each trainer's delivery of instruction throughout the course of the study evaluated fidelity of training, with the specific day and site for the observation of each trainer selected randomly each week. Evaluation procedures included a review of the student's training data and an observation of the trainer during the training session. Fidelity of training was based on whether the trainer (a) provided the level of prompt specified by the decreasing prompt hierarchy, (b) followed specified correction procedures, and (c) recorded step and error data correctly. The fidelity of training was calculated by dividing the total number of prompts, correction procedures, and incidents of data recording completed correctly by the trainer during the session and divided by the total number of prompts, correction procedures, and incidents of data recording during the training session multiplied by 100%. Fidelity of instruction delivery ranged from 95 to 100%, with an average of 97% across trainers and observations.

Interobserver agreement was gathered on 80% of all generalization probes. Interobserver agreement was calculated on student performance of task analysis steps by dividing the number of agreements between the trainer and the observer by the number of agreements plus disagreements and multiplying by 100%. An agreement was scored only if both the trainer and observer had recorded a student's performance of the step as correct or incorrect. Interobserver agreement also was calculated on the specific errors made by students during generalization probe sessions following the same procedures. Interobserver agreement on performance of task analysis steps ranged between 98 and 100%, with an average of 99% across all probes. Interobserver agreement on student errors across all probe sessions ranged from 98 to 100%, with an average of 99%.

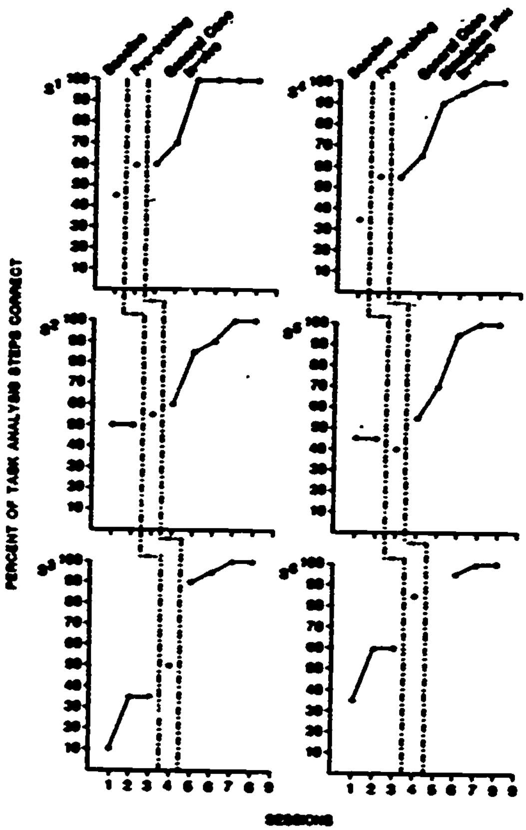

Figure 1. The percentage of task analysis steps completed correctly during probe sessions.

Results

Performance on Task Analysis Steps

The percentage of task analysis steps completed correctly by students during each probe session is presented in Figure 1. During Baseline, student performance on task analysis steps across the three dollar ranges ranged from 11 to 60% correct. The performance of students following next dollar pretraining ranged from 40 to 86% correct, with an average of 59% steps correct.

Following training, all six students were able to perform the steps of the task analysis across the three dollar value ranges. In the general case in vivo training condition, Students 1, 2, and 3 were able to perform all steps of the task analysis across two consecutive generalization probe sessions within 4, 5, and 4 probe sessions, respectively. These students performed an average of 88% of the task analysis steps correct across all probe sessions.

Following the general case simulation plus in vivo training condition, Students 4, 5, and 6 were able to complete all steps of the task analysis across the three dollar value ranges in 6, 5, and 3 probe sessions, respectively. These students performed an average of 88% of the task analysis steps correct across all probe sessions.

Student Errors during Probe Sessions

Students who received general case in vivo instruction made a total of 47 errors, with an average of 3.1 errors per probe session. Students who received general case in vivo simulation plus in vivo training made a total of 62 errors, with an average of 4.2 errors per probe session.

Table 2 presents the distribution of the specific errors made by students for each step of the task analysis. Close examination of Table 2 indicates that, although the overall frequency of errors during probes was higher

Table 2
Frequency and Proportion of Errors by Task Analysis Step

Steps/errors	General case in vivo				General case simulation plus in vivo			
	S1	S2	S3	Total	S4	S5	S6	Total
Enters the lobby								
Does not enter	1	0	1	2	1	1	1	3
Does not move to center of lobby	3	2	2	7	3	4	0	7
Approaches counter								
Does not approach	4	1	0	5	4	0	0	4
Gets in wrong line	1	3	0	4	0	1	0	1
Stands too far from counter	1	0	0	1	0	0	0	0
Orders								
Does not present order	0	0	0	0	0	0	0	0
Presents order too early	0	0	0	0	0	0	0	0
Presents order to wrong person	0	0	0	0	0	0	0	0
Presents wrong order	0	2	0	2	0	4	0	4
Removes money from pocket or purse								
Does not initiate	0	0	0	0	0	0	0	0
Too slow	0	0	0	0	3	0	0	3
Drops money	0	0	0	0	0	0	0	0
Gives correct amount								
Does not initiate	0	0	0	0	0	0	0	0
Gives too much	0	3	0	3	1	3	0	4
Gives too little	0	0	0	0	2	1	0	3
Counts too slow	0	0	0	0	1	0	0	1
Gets change								
Leaves area	0	1	0	1	0	0	0	0
Does not accept change	0	0	0	0	0	0	0	0
Puts away change								
Does not put away change	2	0	0	2	0	3	0	3
Leaves area	0	1	0	1	0	0	0	0
Gives to trainer	0	0	0	0	1	1	1	3
Moves out of line								
Leaves area	0	0	0	0	1	0	0	1
Waits in front	6	2	0	8	4	3	0	7
Obtains order								
Does not obtain	0	0	0	0	0	0	0	0
Obtains wrong order	0	0	0	0	0	0	0	0
Gets napkins and condiments								
Does not initiate	0	3	1	4	5	3	1	9
Too slow	1	0	0	1	0	0	0	0
Locates empty seat								
Does not initiate	1	0	0	1	1	0	0	1
Seat occupied	0	0	0	0	0	0	0	0
Waits for trainer	1	0	0	1	0	0	0	0
Cleans up								
Does not initiate	1	0	0	1	0	2	0	2
Leaves items	2	1	0	3	5	0	0	5
Does not locate can	0	0	0	0	1	0	0	1
Does not exit	0	0	0	0	0	0	0	0

for students in the general case simulation plus in vivo training, the relative distribution of errors by type within task analysis steps was nearly identical.

Training Trials and Time to Criterion

The average number of training trials and time required for students to come to criterion in each intervention is presented in Table 3. An average of 21 training trials was required for students who received general case in vivo training to perform all steps of the task analysis across two consecutive probe sessions. Students 1, 2, and 3 received 27, 24, and 13 in vivo training trials, respectively. These students received an average of 140 min of instruction to meet criterion: Student 1 received 180 min, Student 2 received 160 min, and Student 3 received a total of 80 min of instruction in fast-food restaurants.

Table 3
Average Training Trials, Errors, and Time to Criterion

Intervention	Training trials		Training time (min)	
	Total	In vivo	Total	In vivo
General Case In Vivo				
Student 1	27	27	180	180
Student 2	24	24	160	160
Student 3	13	13	80	80
Mean	21	21	140	140
General Case Simulation plus In Vivo				
Student 4	46	14	220	100
Student 5	31	9	100	60
Student 6	50	17	200	100
Mean	42	13	193	87

An average of 42 training trials was required for students in the general case simulation plus in vivo training condition to meet criterion. This included an average of 29 simulation training trials (Student 4 = 32, Student 5 = 22, and Student 6 = 33) and an average of 13 in vivo training trials (Student 4 = 14, Student 5 = 9, and Student 6 = 17). The average time in instruction to criterion for these students was 193 min, which included an average of 87 min of simulation instruction (Student 4 = 120, Student 5 = 40, and Student 6 = 100) and an average of 87 min of in vivo instruction (Student 4 = 100, Student 5 = 60, and Student 6 = 100).

Cost of Training

The cost of each intervention was calculated based on the total amount of staff time required to train students to criterion, the total travel costs for in vivo instruction, and the total cost of materials for training (i.e., items purchased during in vivo training and the cost of the simulation materials). Table 4 summarizes these data. The average training costs for each student who received general case in vivo training was $71.02. The total costs for Students 1, 2, and 3 were $91.60, $80.96, and $40.50, respectively. The average cost of training for each student that received general case simulation plus in vivo training was $153.99. The total cost of training for Students 4, 5, and 6 was $181.20, $133.55, and $162.22, respectively. The average cost of in vivo instruction for students in the general case simulation plus in vivo group was $58.99. The total in vivo training costs for Students 4, 5, and 6 were $70.78, $46.01, and $60.16, respectively.

Table 4
Costs of General Case In Vivo and General Case Simulation plus In Vivo Training

Intervention	Total costs in dollars		Costs per hour in dollars		Costs per trial in dollars	
	Total	In vivo	Total	In vivo	Total	In vivo
General Case In Vivo						
Student 1	91.60	91.60	30.53	30.53	3.39	3.39
Student 2	80.96	80.96	30.43	30.43	3.37	3.37
Student 3	40.50	40.50	30.22	30.22	3.12	3.12
Mean	71.02	71.02	30.43	30.43	3.32	3.32
General Case Simulation plus In Vivo						
Student 4	181.20	70.78	49.37	42.63	3.93	5.05
Student 5	133.55	46.01	50.07	46.03	4.30	5.11
Student 6	162.22	60.16	48.71	35.88	3.24	3.50
Mean	158.99	58.99	49.38	40.87	3.75	4.42

The average costs of an hour of instructional time for students in general case in vivo training was $30.48. The costs of an instructional hour for Students 1, 2, and 3 was $30.53, $30.43, and $30.22, respectively. For students who received general case simulation plus in vivo training, the average cost for an hour of training was $49.38. For Students 4, 5, and 6 it was $49.37, $50.07, and $48.71, respectively. The average cost of an hour of in vivo instruction in the general case simulation plus in vivo group was $40.87. The average cost of an hour of in vivo instruction for Student 4 was $42.63, for Student 5 it was $46.03, and for Student 6 it was $35.88.

Finally, the average cost of each instructional trial for students who received general case in vivo training was $3.32. The costs for each trial by student were $3.39 for Student 1, $3.37 for Student 2, and $3.12 for Student 3. The average cost of an instructional trial for students in the general case simulation plus in vivo group was $3.75, with costs of $3.93, $4.30, and $3.24 for Students 4, 5, and 6, respectively. The average cost of in vivo training trials for students in the general case simulation plus in vivo training was $4.42, with a per in vivo trial cost of $5.05, $5.11, and $3.50 for Students 4, 5, and 6, respectively.

Discussion

This study examined the effectiveness of general case in vivo and general case simulation plus in vivo training strategies in teaching use of fast-food restaurants to students with moderate disabilities. The results indicate that both strategies resulted in generalized performance in three fast-food restaurants.

Close examination of probe data indicated that with the exception of Student 6, pretraining of the next dollar strategy in the classroom using flash cards did not result in functional performance in generalization probe sites. These data are consistent with previous studies that [illegible]wn that traditional classroom instructional [illegible]r formats that attempt to "simulate" the nat-[illegible]ng used in isolation do not lead to generalized performance in community settings (Bates, 1980; Coon et al., 1981; McDonnell et al., 1985).

Analysis of the errors made by students during probes showed no significant differences between the topography of errors made by students in the general case in vivo and general case simulation plus in vivo training packages. However, students who had received general case simulation plus in vivo training had a higher total number of errors during probe sessions. One possible explanation for the differences in the total number of errors is that students in the general case simulation plus in vivo training package were under control of irrelevant stimuli present in the simulation and/or the in vivo training site (Etzel & LeBlanc, 1979; Horner, McDonnell et al., 1986; Koegel & Rincover, 1976).

The design of the study limits the direct comparisons that can be made about the relative efficiency of the general case in vivo and general case simulation plus in vivo training packages. However, these data do suggest that practitioners may need to examine closely the potential benefits of simulation training in combination with in vivo training when the range of stimulus and response variation can be sampled in actual performance settings. Although the relative number of in vivo training trials and the amount of training time in in vivo settings was lower for students in the combined strategy, the *total* number of training trials and the *total* amount of training time was actually higher than for students who only had in vivo training. In addition, the average and individual costs of the combined strategy were higher than the costs of training solely in fast-food restaurants.

These results must be interpreted in light of several limitations of the study. First, the small number of students participating in the study limit the generalizations that can be made about the relative efficiency of the combined general case simulation and in vivo training and general case in vivo training packages. Second, because the participants in this study were students with moderate handicaps, it is unclear whether these strategies would produce the same levels of generalized performance for students with severe or profound disabilities. Furthermore, the apparent differences in the relative efficiency of these packages might be significantly different for students with more severe disabilities.

Despite these limitations, this study tends to support the recommendation of several researchers that training in community settings is the best alternative for instruction (Horner, McDonnell et al., 1986; Nietupski et al., 1986; Sailor et al., 1986). Although community-based instruction appears to be the strategy of choice, teachers should not assume that combined simulation and in vivo training strategies are never appropriate. This study shows that a combined strategy can provide an effective means of teaching generalized responding when sampling the range of stimulus and response variation is not possible in the community settings accessible from the school. The combined strategy would also appear to provide a powerful "back up" for teaching discriminations or responses that are not easily taught in community settings.

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A Comparison of Serial and Concurrent Sequencing Strategies in Teaching Community Activities to Students with Severe Handicaps

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Running head: Sequencing Strategies

Abstract

This study examined the relative efficacy of serial and concurrent sequencing strategies in teaching generalized grocery item location to six students with severe handicaps. The efficacy of the strategies was assessed through a two-level multiple baseline across subject design. The results showed that the concurrent sequencing strategy resulted in better generalized performance in three nontrained grocery stores. In addition, there were no significant differences between the two strategies in the number of trials required for students to meet the designated training criterion. The results are discussed in terms of the implications for practitioners in designing community-based training programs and future research in the area of community-based instruction.

A Comparison of Serial and Concurrent Sequencing Strategies in Teaching Communtiy Activities to Students with Severe Handicaps 1

One way to evaluate the degree to which community-based skills are functional for students with severe handicaps is to assess the extent to which they generalize across un-trained conditions or settings. Indeed, skill generalization becomes a primary objective in developing instructional programs to teach community-based skills to learners with severe handicaps (Wilcox & Bellamy, 1982; Sailor et al., 1986). General case programming (Horner, Sprague, & Wilcox, 1982) has been shown to be an effective procedure in teaching responding across a wide range of un-trained community and vocational skills such as street crossing (Horner, Jones, & Williams, 1985), using the telephone (Horner, Williams, & Stevely, 1987), making purchases from vending machines (Sprague & Horner, 1984), bussing tables (Horner, Eberhard, & Sheehan, 1986), and using fast food restaurants (McDonnell & Ferguson, 1988).

With community-based activities, general case programming allows the program developer to draw from the universe of potential performance settings a training sub-set that reflects the range of stimulus and response variations found in the performance universe. As a result, the program developer increases the efficiency of instruction by reducing the number of training settings required to achieve generalized responding in the student.

Once the representative sub-set of settings has been identified the next step is to determine the order in which the training settings are to be presented to the learner (McDonnell & Ferguson, 1988a). Program developers have essentially two presentation formats to choose from, concurrent and serial. In a concurrent presentation sequence the training settings are randomly presented to the learner across sessions. By contrast, in a serial presentation sequence only one training setting is presented. The student is required to reach some pre-determined level of mastery in one training setting before the next is presented.

Schroeder & Baer (1972) compared the effects of serial and concurrent task presentation sequences on the acquisition of a generalized vocal imitation response in two children with mental retardation. Under serial presentation conditions, students were trained to criterion on a single vocal imitation. During concurrent item presentation, students received training on three target items during a single instructional session. Results showed that both presentation methods were effective in training target responses. However, concurrent presentation training proved superior to serial presentation training in terms of producing generalized imitation in the learners. Panyan & Hall (1978) conducted a similar study in which serial and concurrent presentation formats were compared across two related tasks. They also found concurrent presentation training to be superior in terms of generalization to un-trained items. Waldo, Guess, & Flanagan (1982) compared the effects of serial and concurrent training on the receptive labeling ability of three persons with severe mental retardation. Consistent with the previously cited studies, they found concurrent presentation training produced superior generalization.

While these studies document the superior generalization effects of concurrent presentation sequences over serial sequences, there is a paucity of studies that examine the effects of these procedures with community-based tasks. This study examines the relative effectiveness of serial and concurrent presentation training on the generalized grocery item location of six students with severe handicaps.

Method

Subjects

Six students enrolled in two integrated, community-based high school programs for severely handicapped adolescents participated in the study. Their mean age at the time of the study was 17 years 1 month, with a range of 16 years 3 months to 18 years 1 month. Five of the six were classified as severely intellectually handicapped. Subject 4 was non-vocal and classified as severely multiply handicapped. Their mean I.Q. was 44 with a range of 36 to 57 as measured by the Wechsler or Stanford-Binet Intelligence Tests with the exception of Subject 4 whose I.Q. was derived from the Leiter International Performance Scale. All were ambulatory and exhibited no significant behavior problems that would interfere with the acquisition of the experimental task. Subjects were selected for inclusion in the study based on 1) their willingness to participate, 2) parental consent, and 3) the congruence of the experimental task with existing IEP goals.

Task and Settings

The task used in the study required the students to locate ten common grocery items across three stores. Table 1 provides a description of the target items. The items represent different categories or sections of the grocery store (i.e. frozen foods, dairy, produce, etc.). Students were given 12.5 cm. X 9 cm. close-up photographs of the items to assisted them in their search.

(insert Table 1 about here)

Six grocery stores were identified in each of the two communities where the high school programs were located. The stores were considered for inclusion in the study based on three criteria: 1) proximity to their respective schools, 2) the presence of all ten target items within the store, and 3) the store contained at least six aisles. Using a general case approach (Horner, Sprague & Wilcox, 1982) the size of each store, the configurations of the aisles, and the relative location of target items within each store was analyzed. As a result of the general case analysis, three generalization probe stores and three training stores that represented the range of stimulus and response variations present in the probe stores were designated in each of the two communities. Table 2 presents a description of the aisle configurations across the training and probe stores in one of the two communities. It describes the general location of the target aisles and items. This analysis was used to ensure that the training stores represented that range of variability encountered in the probe stores. A similar analysis was conducted to identify the training and probe stores in the second community.

(insert Table 2 about here)

Dependent measures

The dependent measures in this study included 1) the percent of items correctly and independently located across the three generalization probe stores, 2) the topography and frequency of specific errors made by students on generalization probes, and 3) the number of item presentations in training stores to generalized performance criterion.

Trainers

The first author and two undergraduate students in special education served as trainers in the study. Each had previous experience working with individuals with disabilities. The undergraduate trainers were provided with approximately 2 hours of initial training on instructional and data-keeping procedures. The fidelity of trainer use of the procedures was assessed on a weekly basis throughout the course of the study.

Design

This study employed a two-level multiple baseline across subjects design (Barlow & Hersen, 1984). Students were randomly assigned to treatment conditions and baselines. The specific phases of the study were Baseline, Concurrent Training, Serial Store 1, Serial Store 2, and Serial Store 3.

Each student in the concurrent condition was paired with a student in the serial condition for the introduction of training conditions. For example, Subject 1 (Concurrent) and Subject 2 (Serial) each entered their respective training condition following the initial baseline probe. Once Subject 2 (Serial) reached 80% correct item location in his first training store, generalization probes were taken across all subjects. Following the probe, Subject 1 continued in concurrent training while Subject 2 began training in his second store. At the same time, the next pair (Subjects 3 and 4) entered training in their respective conditions. The next probe was conducted when both serial subjects (Subjects 2 and 4) reached 80% in their respective training stores. Following the third probe, Subjects 5 and 6 entered into their respective training phases while serial Subjects 2 and 4 moved to their next training store. Generalization probes were then conducted across all subjects when all three serial subjects were able to correctly and independently locate at least 80% of the target items within their respective training stores.

Once a subject in the serial condition had completed training across all three stores, he/she entered a baseline phase. Following the return to baseline, the serial subject entered the concurrent presentation phase.

Training Procedures

Training procedures for both experimental groups in their respective training stores were identical. During . : 20 minute training session photographs of the target items were presented to the student in random order. As many item trials could be presented as were possible within that period. The same photo cards were used for both training and probe trials.

A decreasing prompt hierarchy was utilized to train the student to efficiently scan aisles, and match items to the photo sample. A item was considered correct if the student located the item without trainer assistance and without committing either an aisle or item error. This was the same standard for correct item location used during generalization probe trials.

Concurrent Store Presentation

For the three students assigned to this conditions the three training stores were presented to them in a randomized order across sessions. The only condition was that no one training store be visited more than two days in a row.

Serial Store Presentation

Students assigned to this condition received training at a single store until they were able to correctly and independently loca' 80% of the target items. Once this criterion was reached, a generalization probe trial was initiated followed by the presentation of the next training store. The order of presentation of the training stores was counterbalanced across the three students in this condition.

Generalization Probes

Generalization probes occurred in each of the three designated probe stores. The order of presentation of the probe stores was randomized across probe sessions. A generalization probe trial consisted of the trainer leading the student into the store and past the check-out stands so the student was positioned at the front perimeter of the aisles. The first item photo was then presented to the student with the request, "Please find the Blue Bonnet". No other trainer assistance was given throughout the duration of the trial. The student was given three minutes to enter the aisle that contained Blue Bonnet.

Once a student entered the aisle that contained the target item he/she had 60 seconds to locate it and acknowledge to the trainer that he/she had made a selection be either picking the item up and showing it to the trainer or simply touching the item and saying, "This one", or "This is it", etc.

Once the Blue Bonnet was located the trainer non-contingently reinforced the student by thanking him or her for working. The photograph of the next target item was then presented to the student with the prompt, "Find bananas". The target items were presented to the student in the order indicated in Table 1.

The correct procedure for locating the target aisle was for the student to walk along the perimeter of the aisles, scanning down each as he/she passed. In the stores where the aisles were traversed by a long center aisle (as indicated in Table 2), the correct procedure was to move along the center aisle and scan the aisles on the left and right as he/she passed. If the student failed to enter the correct aisle within the three minute limit, entered an incorrect aisle, or passed the correct aisle three times the trainer scored an "aisle error" and ended the search by thanking the student for working and taking back the photo. The student was lead to the correct aisle nearest the end to the previous target item. The student was not informed that this was the correct aisle for the preceding item. The trainer then gave the next item photo to the student with the prompt, "Find ____ ".

In some cases the target items were located on the back wall of the store rather than on one of the aisles. In this case it was not considered an error if the student moved to the back via an aisle. Once arriving at the rear perimeter, the student was considered as having entered the correct aisle.

Upon entering the correct aisle the student had 60 seconds to locate the target item. If the student failed to make a selection within 60 seconds, selected the wrong item, selected the right item but the wrong brand, or selected the right item and brand but the wrong size, the trainer would score an "item error" and end the search by thanking the student for working and taking back the photo. The next photo item was then presented to the student, with the prompt, "Ok, now find ______."

Following presentation of all items within a probe store the student was given the opportunity to locate the items for which he/she was initially unable to locate the correct aisle. This was accomplished by leading the student to the head of the target aisle, presenting the photo, and giving the prompt, "Ok find ______ on this aisle".

Results

Percent of Items Correct

The percentage of items correctly located during generalization probes across students and conditions is presented in Figure 1. The percents were calculated by summing the items correctly located and dividing by 30 which is the total number of items presented across the three probe stores. During the initial baseline phase, student performance ranged from 0% to 30% items correct across the three probe stores. Percent of items correct for students in the concurrent presentation condition ranged from 13% to 100%. Percent of items correct for student in the serial presentation condition ranged from 17% to 93%. Student 4 was the only student to reach performance criterion (80% items correctly located in probe stores) during serial presentation training. Following a return to baseline, students in the serial condition entered training under concurrent presentation conditions, their percent of items correct during this phase ranged from 70 to 100 percent.

(insert Figure 1 about here)

Table 3 lists the mean percent of items correct across all generalization probes by training phase. Student 1, 3, and 5, who were assigned to the concurrent presentation condition had means of 61.7%, 92.5%, and 59.1% respectively across generalization probes. At the same time Students 2, 4, and 6, who were assigned to the serial presentation condition obtained means of 35.6%, 72%, and 52.3% correct across generalization probes.

(insert Table 3 about here)

By subtracting the mean percent of items correct of each student in the serial presentation condition from his/her counterpart in the concurrent presentation condition we obtained mean differences of 26.1 percentage points between Students 1 & 2, 20.5 percentage points between Students 3 & 4, and 6.8 percentage points between Students 5 & 6. The mean difference in percent correct item location between students in the concurrent condition and students in the serial condition was 17.8 percentage points.

Following a return to baseline phase, students in the serial presentation condition entered a concurrent presentation phase. Table 3 indicate that the mean percent of items correct increased to 80.75% for Student 2, 98.5% for Student 4, and 78.6% for Student 6 which represents a mean group gain of 32.6 percentage points between their serial and concurrent phase performances.

Specific Student Errors on Probe Trials

Student errors on generalization probe trials were divided into two categories, aisle errors and item errors. Aisle errors included entering an incorrect aisle (i.e. an aisle on which the target items was not located), passing the correct aisle three times without entering, and failure to enter the correct aisle within the three minute time limit. Table 4 presents the mean frequency of specific aisle errors committed by students during probe trials across conditions. Examination of Table 4 reveals that students in the serial condition had generally a higher mean frequency of aisle errors than their student counterparts in the concurrent presentation condition. Following introduction of concurrent presentation training for students in the serial training condition, the mean frequency of aisle errors decreased from their serial condition frequency.

(insert Table 4 about here)

Item errors included failure to make a selection within the one minute time limit, selecting a wrong item type (e.g. paper towels instead of toilet paper), selecting the correct item type but the wrong brand (e.g. 7-Up instead of Sprite), and selecting the correct item type and brand but wrong size (e.g. 3.4 ounce Colgate instead of the 6.4 ounce size). Table 5 presents the mean frequency of specific item errors committed by students during probe trials across conditions. Examination of Table 5 reveals that as a group, students in the serial presentation condition were more likely to commit a No Selection Error (i.e. no selection within the one minute time limit) than students in the concurrent presentation condition. Following introduction of concurrent presentation conditions for student assigned to the serial condition the mean frequency of item errors decreased below their serial condition frequency.

(insert Table 5 about here)

Item Presentations in Training Stores to Criterion

To calculate this measure, the total number of training item presentations required to meet the generalized performance criterion was summed across students and conditions. Performance criterion on generalization probes was set at 80% items correct across two consecutive generalization probe sessions. Table 6 presents the number of item presentations in training stores by student across presentation conditions.

(insert Table 6 about here)

Students receiving concurrent presentation training required a mean of 178 item presentations in order to attain criterion. In contrast, only one student in the serial training condition reached criterion during training.

Student 4 reached criterion after 50 item presentations in his first serial training store, 30 presentations in his second store, and 89 presentations in his third training store.

Following serial store training, Students 2 and 6 required 100 and 141 presentations respectively, under concurrent presentation conditions in order to reach generalized performance criterion. When taking into consideration the number of item trials during serial training, Students 2 and 6 required a total of 225 and 211 presentations respectively, in order to reach generalized performance criterion.

Reliability

Independent observations were taken across 660 of the 1680 item presentations that occurred during generalization probes. Inter-observer agreement was calculated by determining whether both the trainer and the independent observer similarly indicated that an error occurred (or did not occur) on each target item. Of the 660 independently observed probe item presentations, 6 disagreements occurred. By dividing agreements by agreements plus disagreements, a 99% overall inter-observer agreement was obtained.

Discussion

The relative effectiveness of general case serial and concurrent site presentation sequences was compared using 6 high school-aged students with moderate to severe mental retardation. The task utilized in this study required the students to independently located 10 target grocery items across three un-trained generalization stores. Dependent measures included percent of items correctly located across probe stores, specific student errors committed on generalization probes, and number of item presentations in training stores to criterion.

In terms of percent of items correctly located across the three generalization probe stores, concurrent site presentation would appear to be a more effective method of sequencing training sites if generalized responding is the objective. As a group, students in the concurrent presentation condition performed better than students who received training using a serial site presentation sequence. All students in concurrent condition attained generalized performance criterion, as opposed to only one student in the serial presentation condition. One possible reason for the discrepancy is that serial presentation sequence restricted the range of stimulus and response variation available to the student during training. Recall that the training stores were selected because, as a group, they contained the range of stimulus and response variations encountered in the generalization probe stores. This is not to say that each training store contained <u>all</u> the variations. In the concurrent presentation sequence the entire range of stimulus and response variations were presented to the student after only a few sessions. By presenting the training sites in a serial sequence students were only exposed to the specific sub-set of variation associated with the specific training store at any given point in the training sequence. As successive stores were introduced for training, the sub-set of variation expanded.

A logical analysis would lead one to predict that once all training stores had been presented in the serial sequence, or in other words, once all of the stimulus and response variations had been presented, students would be able to successfully generalize their performance to the un-trained settings. This however was not the case. Two of the three students in the serial presentation condition failed to attain generalized performance criterion following presentation of all the training stores in the sequence. It would appear that even though the range of stimulus and response variation was presented, students were unable to synthesize the variation information from the three training stores when they were presented in a serial fashion. Schroeder & Baer (1972) suggest that the inferiority of the serial presentation method might have been due to the subjects' responding to the probe items based on the stimulus information acquired from the most immediately preceding training session. Items presented concurrently may be less susceptible to this immediacy phenomenon.

Following a return to baseline for students in the serial sequence condition, a concurrent presentation phase was introduced. This phase proved effective in raising the student performance to criterion level. Examination of the data suggest an interesting phenomenon in regard to the concurrent phase lag with the serial presentation students. Students previously trained under serial presentation conditions required almost the same number (or more) item presentations under concurrent training condition in order to attain generalized performance criterion (see Table 5). Students receiving training under concurrent presentation conditions required and average of 178 item presentations in training in order to attain generalized performance criterion. The two students who failed to attain generalized performance criterion under serial presentation conditions received an average of 97 item presentations and averaged an additional 120 item presentations under concurrent conditions for a total average of 218 item presentations in order to attain generalized performance criterion. An examination of the error data on Tables 4 and 5 indicate that students in the serial presentation condition made more aisle and item errors than students in the concurrent training condition. This would suggest that the serial training somehow allowed students to learn misrules which interfered with the acquisition of the skill under concurrent presentation training.

Implications for Instruction

The power of general case programming as a tool for facilitating generalized responding in community settings can be enhanced as a result of concurrent presentation of training settings. Serial presentation of training settings effectively nullifies the objective of the general case analysis by narrowing the range of stimulus and response variations presented to the student to a point where the information becomes useless to the student as a means of responding in un-trained settings. This study has demonstrated that even when all serial settings have been presented, generalized responding is unlikely to occur. In addition, the serial sequence impedes attainment of generalized performance criterion under concurrent presentation conditions.

Implications for Generalization Research

It is unclear why attainment of generalized performance criterion under concurrent presentation conditions was impeded in those students following training using a serial presentation sequence. Logical analysis would lead us to conclude that progress toward generalized performance criterion would accelerate in concurrent presentation training following a serial sequence simply as a result of repeated exposure to the task. This was not the case however. Future studies in this area should examine the response patterns of learners in un-trained settings in order to identify the stimulus characteristics of the serially presented settings that are responsible for the erroneous response patterns.

Author Notes

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TABLE 1

Target Item Order and Description

Item	Size	Categorv
1. Blue Bonnet Margarine	16 oz.	Dairy
2. Bananas	Bunch	Produce
3. Charmin Bathroom Tissue	6-Roll (any color)	Paper Goods
4. Green Giant Whole Kernel Corn	17 oz.	Canned Goods
5. Tide Laundry Detergent	4 lb. 8 oz.	Cleaning Supplies
6. Colgate Toothpaste	6.4 oz.	Personal Care
7. Whole Sun Orange Juice	12 Fl. oz.	Frozen Foods
8. Cheerios Breakfast Cereal	20 oz.	Cereal
9. Sprite	2 liter	Soft Drinks
10. Zesta Saltine Crackers	16 oz.	Cookies/Crackers

Table 2

Descriptio[illegible] [illegible] Aisles and Relative Location of Items Within Training and Generalization Probe Stores Right, Left, and Center Refer to Location of Target Aisle in Store From Left to Right. Front, Middle, and Rear Refer to the Location of the Item on the Aisle in Relation to the Front and Back of the Store. High, Medium, and Low Refer to the Location of the Item on the Shelf.

	Training Stores			Generalization Probe Stores		
Feature/Item	Store 1	Store 2	Store 3	Store 1	Store 2	Store 3
Number of Aisles	17 Single	14 Traversed By Center Aisle	13 Traversed By Center Aisle	17 Single	17 Half Traversed By Center Aisle Half Single	10 Single
Blue Bonnet Location	Right Wall Rear Low	Right Wall Rear Low	Back Wall Center of Store Low	Right Half Rear Low	Back Wall Right Rear High	Back Wall Center of Store Low
Bananas Location	Right Half Front On Table	Right Half Front On Table	Left Half Middle On Table	Left Half Middle On Table	Right Half Front On Table	Left Half Rear On Table
Charmin Location	Left Half Rear Medium	Left Half Rear High	Right Half Rear High	Left Half Middle Medium	Left Half Rear High	Right Half Front Medium
Corn Location	Right Half Middle Low	Right Half Rear Medium	Left Half Middle Medium	Left Half Front Medium	Left Half Front Low	Left Half Rear Low
Tide Location	Left Half Middle Low	Left Half Middle Low	Right Half Middle Low	Left Half Front Low	Right Half Front Low	Right Half Middle Low
Colgate Location	Left Half Rear Medium	Left Half Front High	Right Half Rear Medium	Back Wall Middle Medium	Left Half Middle Medium	Right Half Middle Medium

Table 2 cont.

	Training Stores			Generalization Probe Stores		
Feature/item	Store 1	Store 2	Store 3	Store 1	Store 2	Store 3
Orange Juice Location	Center Aisle Middle Open Freezer	Center Aisle Front Open Freezer	Center Aisle Front Open Freezer	Right Half Rear Closed Freezer	Center Aisle Front Open Freezer	Right Half Rear Closed Freezer
Cheerios Location	Right Half Rear Medium	Right Half Front Low	Left Half Rear Low	Right Half Front Low	Right Half Middle Medium	Left Half Front Low
Sprite Location	Right Half Middle High	Right Half Front High	Left Half Middle High	Right Half Middle High	Right Half Middle High	Right Half Middle High
Zestas Location	Right Half Middle Low	Right Half Middle Low	Left Half Middle Low	Right Half Front Low	Center Aisle Middle Low	Right Half Middle Low

Table 3

Mean Percentage of Items Correctly and Independently Located

Across Training Conditions

Concurrent Training	Serial Training		
Total Concurrent		Serial	Concurrent
S1 = 61.7%	S2 =	35.6%	80.7%
S3 = 92.5%	S4 =	72%	98.5%
S5 = 59.1%	S6 =	52.3%	78.6%

Table 4

Mean Number of Aisle Error Committed During Probe

Sessions Across Students and Training Conditions

Student/Condition	SERIAL Enters Wrong Aisle	SERIAL Passes Correct Aisle	SERIAL Too Much Time	CONCURRENT Enters Wrong Aisle	CONCURRENT Passes Correct Aisle	CONCURRENT Too Much Time
Concurrent						
1	--	--	--	5.1	1.0	0
3	--	--	--	1.3	0	0
5	--	--	--	3.9	.6	0
Serial						
2	9.7	3.7	1.7	2.0	1.0	0
4	1.3	0	0	0	0	0
6	5.3	1.3	0	3.7	.3	0

Table 6

Item Presentations During Training to Criterion

Concurrent		Serial	
S1	142	S2	125 Serial 100 Concurrent
S3	200	S4	169 Serial 0 Concurrent
S5	193	S6	70 Serial 141 Concurrent
Total	535	Total	364 Serial 241 Concurrent 605 Total

Table 5

Mean Number of Aisle Error Committed During Probe

Sessions Across Students and Training Conditions

	SERIAL				CONCURRENT			
Student/Condition	No Selection	Wrong Item	Right Item Wrong Brand	Wrong Size	No Selection	Wrong Item	Right Item Wrong Brand	Wrong Size
Concurrent								
1	—	—	—	—	5.4	.1	.4	1
3	—	—	—	—	.4	0	0	[illegible]
5	—	—	—	—	.3	.3	.3	8.4
Serial								
2	11.7	0	.0	.7	1.0	0	0	.8
4	1.7	1.0	.7	4.0	.5	0	0	0
6	.7	.3	3.0	5 0	1.7	.3	0	1.0

Figure Notes

Figure 1. Percent of Activity Steps Completed Correctly

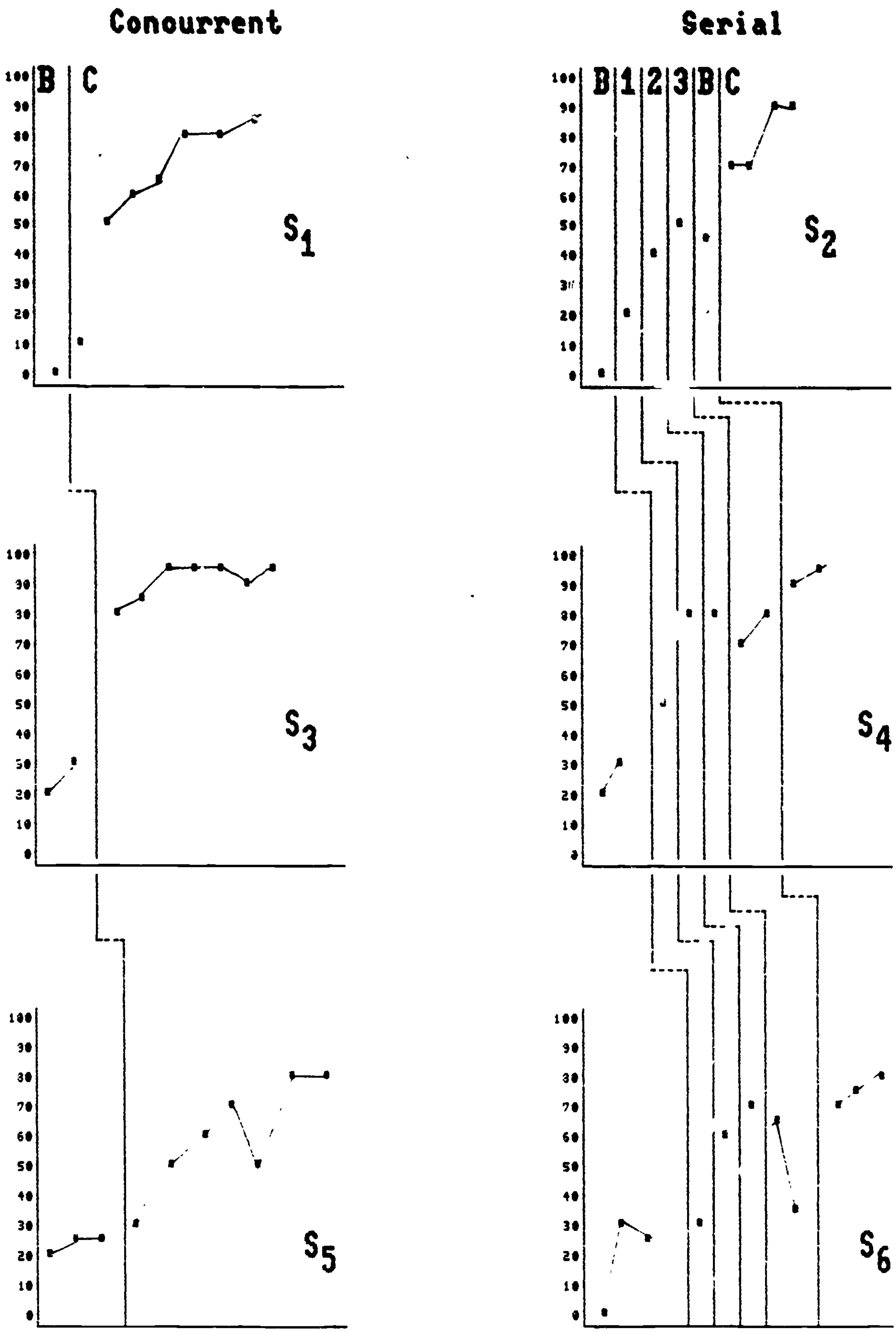

Figure 1

Attachment B

Research Reports for Studies Examining Strategies to Develop Stimulus Control in Community Settings

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The Effects of Time Delay and Increasing Prompt Hierarchy Strategies on the Acquisition of Purchasing Skills by Students with Severe Handicaps

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Four high school students with severe handicaps were taught to purchase snack items in a convenience store and a fast-food restaurant using either a constant time delay or an increasing prompt hierarchy assistance procedure. The two strategies were compared in a multielement, alternating treatment research design. Results indicated that time delay was the most efficient strategy in teaching use of the convenience store and restaurant. In addition, the topography of student errors during experimental probes suggested that the increasing prompt hierarchy strategy may have created instructional conditions that inhibited transfer of stimulus control to actual task stimuli. Implications of the study for teachers and researchers are discussed.

Research in the last decade has shown that individuals with severe disabilities can learn to perform a wide variety of vocational and community activities (Coon, Vogelsberg, & Williams, 1981; Cuvo, Leaf, & Borakove, 1978; Johnson & Cuvo, 1981; Schleien, Ash, Kiernan, & Wehman, 1981; Sowers, Thompson, & Connis, 1979). These successes have led to an increased emphasis on community-based instruction for high school students with severe handicaps (Sailor et al., 1986; Wilcox & Bellamy, 1982). Unfortunately, the implementation of community-based instruction in the schools has outpaced the empirical validation of training strategies appropriate for these settings (Snell & Browder, 1986). In order for community-based instruction to have maximum impact, guidelines must be developed to help teachers design effective and efficient instructional programs.

One area of program design in which teachers need immediate direction is the selection of response prompting and fading procedures (Billingsley & Romer, 1983; Ford & Mirenda, 1984; Wolery & Gast, 1984). Although a number of response-prompting strategies have proven to be effective in establishing reliable performance of community activities (c.f., Gaylord-Ross & Holvet, 1985; Sailor & Guess, 1983; Snell, 1983), the relative efficiency of these strategies has yet to be examined.

The increasing prompt hierarchy is the most frequently advocated prompting strategy for use in community settings (Cuvo et al., 1978; Gaule, Nietupski, & Certo, 1985; Schleien, Wehman, & Kiernan, 1981). It is designed so that the student is provided the opportunity to perform the target response on each trial without teacher prompts. If the student does not respond correctly, the teacher provides increasing levels of assistance until he or she performs the step accurately (Billingsley & Romer, 1983; Wolery & Gast, 1984). Despite the popularity of increasing prompt hierarchies, its use with students with severe handicaps has been questioned because it can result in prompt dependency (Bellamy, Horner, & Inman, 1979; Csapo, 1981; Snell & Browder, 1986; Wolery & Gast, 1984).

There are two possible reasons why this may occur. First, there is evidence to suggest that students with handicaps attend to the stimuli or dimensions of stimuli that are manipulated during training (Etzel & LeBlanc, 1979; Koegel & Rincover, 1976). In increasing prompt hierarchies, the stimuli that change within and across instructional trials are the teacher's prompts. In fact, the intensity of these prompts successively increase following each student error. As a result, teacher prompts are highlighted during training and the salience of the actual task stimulus is diminished.

Second, stimulus control is established by differentially reinforcing correct responding in the presence of the target stimulus (Saunders & Sailor, 1979; Terrace, 1966). In the increasing prompt hierarchy strategy, the teacher's prompts and some form of reinforcement or feedback are paired with the student's correct response. By differentially reinforcing the student's response fol-

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lowing the teacher's prompt, the probability that the prompt will come to control the response increases with each successive trial. The functional outcome is that irrelevant stimulus control of the student's response is established, and transfer of stimulus control to the task stimulus is made more difficult (Horner, Bellamy, & Colvin, 1984).

Time delay has been suggested as a potential alternative to prompt hierarchies (Halle, Marshall, & Spradlin, 1979; Kleinert & Gast, 1982; Snell, 1982; Snell & Gast, 1981). Time delay is structured so that the presentation of the teacher's prompt is delayed for increasing intervals of time following the presentation of the actual task stimulus (Billingsley & Romer, 1983; Wolery & Gast, 1984). The time between the presentation of the task stimulus and the teacher's prompt is gradually increased beyond the expected response latency for the student by increasing the delay on each successive instructional trial (i.e., progressive time delay) or across blocks of trials or instructional sessions (i.e., constant time delay).

In contrast to the increasing prompt hierarchy, time delay is designed to prevent student errors during training. Theoretically, time delay reduces the probability that irrelevant stimulus control will be established, because (a) the type and amount of teacher assistance remains constant during training, and (b) it leads to correct responding immediately following the presentation of the actual task stimulus. Presumably these two conditions highlight the salience of the task stimulus and reduce the salience of the teacher's prompts. Unfortunately, there have been very few demonstrations of the utility of time delay in teaching complex chains to learners with severe handicaps (c.f., Snell, 1982; Walls, Haught, & Dowler, 1982).

In addition, time delay appears to be somewhat cumbersome to use because of the number of decisions teachers must make in prompting and reinforcing various student responses during training (Billingsley & Romer, 1983; Wolery & Gast, 1984). This is especially true for chained behaviors that require students to make different responses in rapid succession. It has been suggested that the constant time delay procedure is easier to implement than the progressive time delay procedure because the delay changes according to a more consistent criterion, thus reducing the number of decisions the teacher must make on each trial.

The present study addresses the issue of the relative efficiency of an increasing prompt hierarchy and a constant time delay procedure. These procedures were compared in teaching purchasing skills to high school students with severe disabilities.

Method

Students

Four students with severe handicaps were selected for participation in this study. Students ranged in age from 16 to 18 years, with a mean age of 16.75 years. All students were classified as severely mentally retarded with IQs ranging between 10 and 34 ($\bar{X}$ = 21.8) as measured by the WAIS-R. In addition, all of the students participating in the study were nonverbal. None of the students had received training on the target activities prior to the initiation of the study. Students were selected for participation in the study based upon teacher nomination and the correspondence of the targeted training activities with the existing goals in their IEP.

Activities and Apparatus

Students were taught to purchase snack foods (a soft drink and a cookie) with values less than $1 from a convenience store and a fast-food restaurant located near their school. In the convenience store students were taught to complete four steps, including locating the target item, approaching the counter, paying for the item, and obtaining the bagged item. In the fast-food restaurant students were taught to approach the counter, order the desired item, pay for the item, and obtain the item.

In the convenience store students were taught to locate the correct item through the use of shopping cards. These cards were constructed by attaching the product label from each item (i.e., Diet Coke or Grandma's chocolate chip cookies) to an 8 cm × 12.5 cm card. Cards were arranged in a small loose-leaf binder that was carried in the student's pocket or purse.

In the fast-food restaurant, students were taught to use a set of small communication cards (8 cm × 12.5 cm) to present their order to the person at the counter. These cards contained statements such as "I would like a small diet coke, please" or "I would like a cookie, please." Students identified the correct card via a line drawing of the target item located in the right-hand corner of the card. In both the fast-food restaurant and convenience store, students were taught to give a single one-dollar bill from a total of five one-dollar bills to the person at the counter when payment was requested.

Settings and Trainers

The settings for the study were a fast-food restaurant (Hardee's) and convenience store (7-Eleven) located near the students' school. Two special education graduate students served as trainers. Both trainers had experience in working with students with severe handicaps. Each trainer received 1 hr of training on data collection and instructional procedures prior to the initiation of the study.

Measurement

Three measures were used to evaluate the efficacy of the time delay and increasing prompt hierarchy procedures. These included (a) the number of activity steps completed correctly and independently by students during experimental probe sessions; (b) the number and topography of errors made by students during probes; and (c) the number of training trials, errors, and sessions to criterion.

Number of activity steps completed correctly. Measurement of student performance in both the fast-food restaurant and convenience store was conducted via experimental probes. These probe sessions were conducted at the beginning of every third instructional session. Students purchased both a soft drink *and* a cookie during probe sessions.

A correct response required that the student complete the step accurately without trainer assistance. An incorrect response was recorded if the student did not initiate the step within 5 s or performed the step incorrectly. If an error occurred, the trainer completed the incorrect step for the student and then prompted him or her (e.g., "Okay, go on") to continue the activity. No other assistance or reinforcers were provided during probe sessions. Students were, however, allowed to consume the items they purchased after the probe session. Each probe yielded the percentage of activity steps completed correctly by the student across both items.

Probe session errors. The frequency and type of errors made by students were monitored across probe sessions. Prior to the initiation of the study, potential errors for all steps of each activity were identified. The specific errors for each activity step is presented in Table 1. When student errors occurred during probe sessions, the trainer recorded the type of error made by the student on that step. This measure yielded the distribution of student errors by topography for each activity step.

Trials, errors, and sessions to criterion. Three measures were used to assess the relative efficiency of the two prompting procedures. These included the average number of instructional trials, errors, and sessions to criterion across students by intervention.

Procedures

Design. The study employed a multielement, alternating treatment within subject design (Tawney & Gast, 1984). The order of introduction of interventions and tasks were counterbalanced across students. In addition, trainer assignments were counterbalanced. Trainers provided time delay and increasing prompt hierarchy training on both activities. Trainer A provided instruction to Students 1 and 2 and Trainer B provided instruction to Students 3 and 4. The design varied from traditional alternating treatment designs in that data points represent student performance during experimental probe sessions rather than training sessions. Training was terminated when students performed the steps of both activities without assistance on two consecutive probe sessions.

Baseline. Baseline consisted of two probe sessions for each student. On the first day of Baseline, students were probed in either the convenience store or fast-food restaurant, depending on their predetermined sequence of training. Students were probed in the remaining setting on the next school day. The second Baseline probe session in each setting was conducted 3 school days following the initial probe session.

Increasing prompt hierarchy training. The increasing prompt hierarchy strategy was designed to provide assistance *following* a student's incorrect response on an activity step. When an error occurred, the trainer provided increasing levels of assistance to the student using a standardized hierarchy of prompts until he or she performed the activity step correctly. The specific prompts to be used during training were developed for both the shopping and restaurant activities (see Table 2). The generic steps of the hierarchy included (a) an indirect verbal prompt, (b) a direct verbal prompt plus gesture, and (c) direct verbal prompt plus full physical assistance. Students were socially reinforced for independent performance of chain steps.

For example, if a student gave the cashier in the convenience store a one-dollar bill following the payment request, the trainer provided social reinforcement (e.g., "Good job. You gave them $1"). If the student did not give the cashier a one-dollar bill, the trainer implemented the first step in the hierarchy by providing an indirect verbal prompt (e.g., "What do you do now?"). If the indirect verbal prompt did not result in the correct response, the trainer provided a direct verbal prompt (e.g., "Give them $1") plus a gestural prompt (e.g., pointing to their wallet or purse). Finally, if a direct verbal plus gestural prompt did not result in the correct response the trainer provided a direct verbal prompt (e.g., "Give them $1") plus full physical assistance (e.g., physically assist the students to remove $1 from their wallet or purse and place it on the counter). Once the student performed the correct response the trainer provided feedback such as "That's the right way" or "That's better."

Students were allowed to consume one of the items they had purchased at the end of the training session. Training sessions were 20 min long. Students received at least one training trial on each of the two target snack items (e.g., soft drink and cookie) during a session.

Time delay training. Time delay training consisted of a two-phased, constant time delay procedure. This procedure was applied independently to each step of the chain. It differed from the increasing prompt hierarchy training in two ways. First, assistance was provided *prior* to the student's response. Second, the level and type of prompts provided on individual steps of the chain varied from student to student. In other words, one student may have been provided with an indirect verbal prompt while another was provided with a direct verbal prompt plus a gestural prompt. Each student's prompts were selected from the same hierarchies developed for the increasing prompt hierarchy training. To

Table 1
Definition of Errors by Step

Step	Error	Definition
		Convenience store
1. Locate target item		
	Does not initiate	Does not initiate search within 5 s
	Locates wrong item	Does not obtain designated item
	Locates correct item, wrong size	Obtains correct item but a different size than designated on card
	Locates correct item, wrong brand	Obtains same product but a different brand than designated on card
	Does not obtain item from shelf	Locates item but does not pick it up
2. Approach counter		
	Does not initiate	Does not go to counter within 5 s of obtaining item
	Goes to wrong area	Goes to the wrong section of the counter
	Does not get in line	Crowds in front of other customers
3. Pay		
	Does not initiate	Does not initiate payment strategy within 5 s of cashier's request
	Gives too much money	Counts out more than $1
	Does not separate bills	Does not separate one $1 bill
	Does not accept change	Does not take change from cashier
4. Obtain item		
	Does not initiate	Does not pick up purchased item within 5 s of receiving change
	Obtains wrong item	Picks up wrong item from counter
		Fast-food restaurant
1. Approach counter		
	Does not initiate	Does not go to counter within 5 s of entering
	Goes to wrong area	Goes to wrong section of counter
	Does not get in line	Crowds in front of other customers
2. Order		
	Does not initiate	Does not show card to cashier within 5 s of cashier's request
	Places wrong order	Shows wrong card to cashier
	Gives order to wrong person	Shows card to a person who did not request order
3. Pay		
	Does not initiate	Does not initiate payment strategy within 5 s of cashier's request
	Gives too much money	Counts out more than $1
	Does not separate bills	Does not separate one $1 bill
	Does not accept change	Does not take change from cashier
4. Obtain item		
	Does not initiate	Does not pick up purchased item within 5 s of request
	Obtains wrong item	Picks up wrong order

the greatest extent possible, the prompts were the least intrusive level of assistance required to allow students to successfully complete each step of the chain. Once selected, these prompts did not change across instructional trials or sessions.

Prompts were faded by systematically increasing the temporal delay between the presentation of the stimulus for each step and the presentation of the trainer's prompt(s). During the first phase of instruction, trainer prompts were paired with the step stimulus (i.e., 0 delay level). Students were socially reinforced for successful completion of the step. If the student did not complete the step correctly with the predetermined prompt(s), the trainer "put the student through" the correct response by providing a direct verbal prompt and full physical assistance.

For example, during the "0 delay" training phase, the predetermined prompts for a student on the step of paying may have included a direct verbal prompt (e.g., "Give them $1") plus a gestural prompt (e.g., pointing to the student's wallet or purse). These prompts were provided to the student as soon as the cashier made his or her request for payment. If the student made the correct response, he or she was socially reinforced (e.g., "Good job. You gave them $1"). If the student did not respond correctly, the trainer provided a direct verbal prompt (e.g., "Give them $1") and full physical assistance (e.g., physically assisting the students to remove

Table 2
Designated Prompts for Increasing Prompt Hierarchy Training

Activity step	Level	Actual prompt
		Convenience store
1. Locate target item		
	Indirect verbal	"What do you do now?"
	Direct verbal plus gesture	"Find the (*item*)" and point to the correct aisle/section
	Direct verbal plus physical assistance	"Find the (*item*)" and place student's hand on item
2. Approach counter		
	Indirect verbal	"What do you do now?"
	Direct verbal plus gesture	"Go to the cash register/end of line" and point to the correct location
	Direct verbal plus physical assistance	"Go to the cash register/end of line" and lead student to correct location
3. Pay		
	Indirect verbal	"What do you do now?"
	Direct verbal plus gesture	"Give them $1" and point to wallet/bills
	Direct verbal plus physical assistance	"Give them $1" and place student's hand on the bill and help student to place it on the counter
4. Obtain item		
	Indirect verbal	"What do you do now?"
	Direct verbal plus gesture	"Pick up the (*item*)" and point to the item
	Direct verbal plus physical assistance	"Pick up the (*item*)" and place the student's hand on the item and help student to pick up item
		Fast-food restaurant
1. Approach counter		
	Indirect verbal	"What do you do now?"
	Direct verbal plus gesture	"Go to the cash register/end of line" and point to the correct location
	Direct verbal plus physical assistance	"Go to the cash register/end of line" and lead student to correct location
2. Order		
	Indirect verbal	"What do you do now?"
	Direct verbal plus gesture	"Show them your card" and point to the correct card in the book
	Direct verbal plus physical assistance	"Show them your card" and help student to find correct card and show to cashier
3. Pay		
	Indirect verbal	"What do you do now?"
	Direct verbal plus gesture	"Give them $1" and point to wallet/bills
	Direct verbal plus physical assistance	"Give them $1" and place the student's hand on the bill and help student to place it on the counter
4. Obtain item		
	Indirect verbal	"What do you do now?"
	Direct verbal plus gesture	"Pick up the (*item*)" and point to the item
	Direct verbal plus physical assistance	"Pick up the (*item*)" and place the student's hand on the item and help student to pick up item

$1 from their purse or wallet and place it on the counter).

Following three consecutive correct responses at the "0 delay" level, the trainer moved to the second phase of time delay training. In this phase, a 2-s count was inserted between the stimulus and the trainer's prompt(s). This delay period was selected based on observations of the average response latency of nonhandicapped individuals between activity steps in both the convenience store and fast-food restaurant. Students were socially reinforced for successfully initiating and completing the step. If the student did not initiate the response within the 2-s count or subsequently completed the step incorrectly, the trainer provided the predetermined prompt(s). If these prompts did not result in successful performance, the trainer "put the student through" the correct response.

Continuing with the above example, after three consecutive correct responses at the 0 delay level, the trainer inserted a 2-s count between the cashier's request and the predetermined prompt(s) by counting "one thousand one, one thousand two." If the student initiated the response within the 2-s count and subsequently completed the step correctly, he or she was socially reinforced (e.g., "Good job. You gave them $1"). If the student did not initiate the response within the 2-s count or initiated an incorrect response, the trainer provided the predetermined prompt(s). If this did not result in correct performance, the trainer provided a direct verbal prompt (e.g., "Give them $1") and full physical assistance to the student (e.g., physically assisting the students to remove $1 from their wallet or purse and place it on the counter). Following the correction, the trainer provided feedback to the student such as "That's the right way" or "That's better."

Students were allowed to consume one of the items they had purchased during the training session. Students received 20 min of instruction during each session and were provided at least one training trial on each of the two target snack items (e.g., soft drink and cookie).

Fidelity of Training and Interobserver Agreement on Probe Sessions

Samples of training fidelity were gathered on 28.5% of all training sessions. Prior to each observation of increasing prompt hierarchy training, the principal investigator reviewed the student's training data to identify consistent error steps and to note the specific prompts to be provided on each step of the chain should an error occur. The same procedure was used for time delay training except that the type of prompts to be provided to the student and the delay level were noted. During the training sessions, the congruence of the trainer's prompts with the specified procedures was recorded as correct or incorrect. Prompts provided to the student by the trainers were correct if the prompt (a) was delivered within designated time limits and (b) matched the predetermined level or sequence of assistance required by the procedure. A prompt was incorrect if either of these two conditions were violated.

Fidelity of training was calculated for each session by dividing the number of correct prompts provided by the trainer by the number of correct plus incorrect prompts and multiplying by 100%. The fidelity of training for the increasing prompt hierarchy procedure across all trainers ranged from 90 to 100% correct, with a mean of 97% across all observed sessions. The fidelity of training for the time delay procedure ranged from 88 to 100% across all trainers, with a mean of 94%.

Interobserver agreement was gathered on student performance during all probe sessions. Interobserver agreement was calculated for both the number of steps completed correctly by the student during a probe session and the topography of student errors. An agreement was scored for activity steps only if both the trainer and observer recorded the student's performance as correct or incorrect. An agreement was scored for the topography of the student's error only if both the trainer and observer recorded the same error. Interobserver agreement was calculated by dividing the number of agreements by the number of agreements plus disagreements multiplied by 100%. Mean interobserver agreement for activity steps across all subjects and probes was 92% with a range of 75 to 100%. Interobserver agreement on errors across all subjects and probes averaged 94%, with a range of 85 to 100%.

Results

Number of Activity Steps Completed Correctly

Figure 1 presents the percentage of activity steps completed independently by students during probe sessions. These data represent student performance across both snack items. Independent performance of activity steps during the Baseline probe sessions ranged from 0 to 12.5%.

Both prompting strategies resulted in independent performance in the convenience store and fast-food restaurant. One-hundred percent (100%) accuracy on all chain steps for two consecutive probe sessions was set as the criterion for determining student mastery of the activities. In time delay training in the convenience store, Student 1 met criterion in 3 probe sessions and Student 4 in 6 probe sessions. In increasing prompt hierarchy training, Students 2 and 3 met the performance criterion in 10 probe sessions.

In time delay training in the fast-food restaurant, Student 2 met criterion in seven probe sessions and Student 3 in five probe sessions. In increasing prompt hierarchy training, both Students 1 and 3 met criterion in the fast-food restaurant in eight probe sessions.

Student Errors during Probe Sessions

Analysis of student errors across all probe sessions in the convenience store indicated that the highest proportion of errors occurred on the activity steps of locating the target item, approaching the counter, and paying (see Table 3). Although the relative proportion of errors on these steps was similar in both training procedures, the absolute frequency of errors was substantially higher in increasing prompt hierarchy training.

[illegible]ost frequent errors in the fast-food restaurant occurred on the steps of approaching the counter, ordering, and paying. Students who had received time delay training made the highest frequency of errors on the step of paying, whereas students who had received increasing prompt hierarchy training made the highest proportion of errors during probe sessions on the step of approaching the counter.

The distribution of the errors by topography and assistance strategy in the convenience store is presented in Table 4. Close examination of the proportion of errors made on the steps of locating, approaching, and paying by students who had received increasing prompt hierarchy training indicates that students did not initiate the task steps independently. In contrast, the errors made by students who had received time delay training on these steps were distributed across a wider range of errors.

In the fast-food restaurant, failing to initiate task steps independently was the most frequent error pattern for students who had received increasing prompt hierarchy

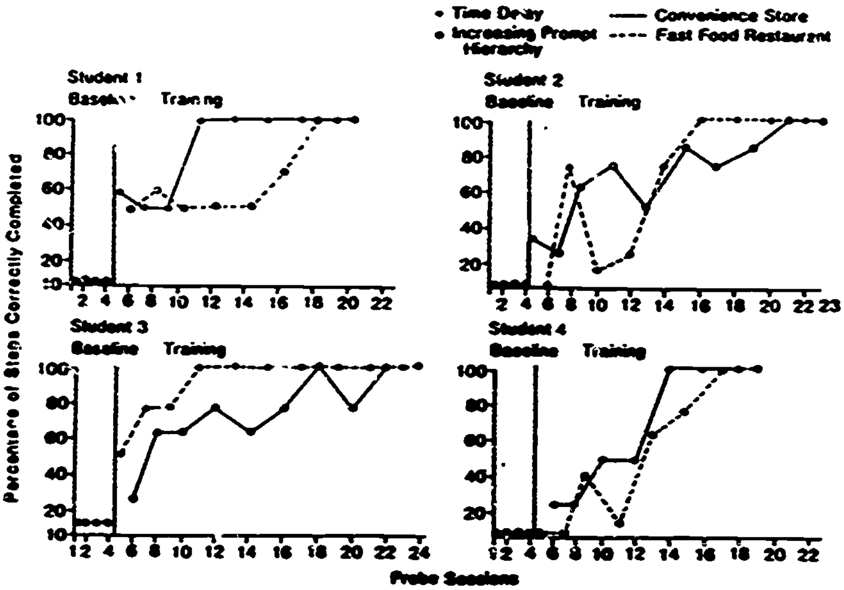

Figure 1. Correct responding during probe sessions.

Table 3
Frequency and Proportion of Errors by Activity Steps during Probes Across Students

Activity step	Time delay		Increasing prompt hierarchy	
	Frequency	Proportion	Frequency	Proportion
	Convenience store			
1. Locate target item	12	.40	16	.35
2. Approach counter	6	.20	17	.37
3. Pay	11	.36	10	.22
4. Obtain item	1	.04	3	.06
	Fast-food restaurant			
1. Approach counter	7	.21	22	.40
2. Order	11	.33	16	.30
3. Pay	14	.40	14	.25
4. Obtain item	2	.06	3	.05

training (see Table 5). Students who had received time delay training in the fast-food restaurant also had difficulty in consistently initiating the ordering response. However, their errors on the steps of approaching the counter and paying included higher frequencies of discrimination and response errors than students who had received increasing prompt hierarchy training.

Average Number of Training Trials, Errors, and Sessions to Criterion

Table 6 presents the average number of training trials, errors, and sessions to criterion for each intervention and activity. The average number of instructional trials required for students to come to criterion in time delay training in the convenience store was 55. The average number of student errors made during training was 19. Given that students made 4 different responses (i.e., locate item, approach counter, pay, and obtain item) on each trial in the convenience store, this frequency of errors represents 8.6% of all possible responses during training sessions. Students required an average of 17 instructional sessions to reach criterion. In increasing prompt hierarchy training in the convenience store, the average number of trials to criterion was 84. Students made an average of 118 errors during training, representing 35% of all possible training responses. The average number of instructional sessions to criterion was 30.

Students who received time delay training in the fast-food restaurant required an average of 52 trials to criterion. These students made an average of 26 training errors, representing 12.5% of all possible responses. The average number of training sessions to criterion was 18. Students who received increasing prompt hierarchy training in the fast-food restaurant required an average of 82 instructional trials to reach criterion. The average number of errors made by these students during training was 91, representing 27% of all possible responses. The average number of instructional sessions for students receiving increasing prompt hierarchy training in the fast-food restaurant was 24.

Comparisons of these data indicate that students who received time delay training in the convenience store on average required 44% fewer instructional sessions and 35% fewer instructional trials than students who had received increasing prompt hierarchy training. In the fast-food restaurant, students who had received time

Table 4
Frequency and Proportion of Errors by Topography during Probes in the Convenience Store

Activity step/error	Time delay		Increasing prompt hierarchy	
	Frequency	Proportion	Frequency	Proportion
1. Locate target item				
Does not initiate	1	.08	10	.60
Locates wrong item	1	.08	1	.06
Locates wrong size	6	.50	1	.06
Locates wrong brand	1	.08	1	.06
Does not obtain item	3	.25	3	.20
2. Approach counter				
Does not initiate	2	.33	15	.88
Goes to wrong area	1	.17	2	.12
Does not get in line	3	.50	0	.00
3. Pay				
Does not initiate	2	.18	9	.90
Gives too much money	7	.64	1	.10
Does not separate bills	2	.18	0	.00
Does not accept change	0	.00	0	.00
4. Obtain item				
Does not obtain item	1	1.00	3	1.00
Obtains wrong item	0	.00	0	.00

Table 5
Frequency and Proportion of Errors by Topography during Probes in the Fast-Food Restaurant

Activity step/error	Time delay		Increasing prompt hierarchy	
	Frequency	Proportion	Frequency	Proportion
1. Approach counter				
Does not initiate	2	.29	21	.95
Goes to wrong area	3	.42	0	.00
Does not get in line	2	.29	1	.05
2. Order				
Does not initiate	11	1.00	16	1.00
Places wrong order	0	.00	0	.00
Gives wrong order	0	.00	0	.00
3. Pay				
Does not initiate	3	.21	11	.75
Gives too much money	2	.14	3	.21
Does not separate bills	8	.57	0	.00
Does not accept change	1	.07	0	.00
4. Obtain order				
Does not initiate	2	1.00	3	1.00
Obtains wrong order	0	.00	0	.00

Table 6
Average Number of Training Trials, Errors, and Sessions to Criterion

Intervention	Convenience store			Fast-food restaurant		
	Trials	Errors	Sessions	Trials	Errors	Sessions
Time delay	55	19	17	52	26	18
Increasing prompt hierarchy	84	118	30	82	91	24

delay training averaged 25% fewer instructional sessions and 37% fewer instructional trials than students who had received increasing prompt hierarchy training.

The average number of training trials per session in the convenience store for students who received time delay training was 2.9 trials and 2.7 trials for those who had increasing prompt hierarchy training. In the fast-food restaurant, time delay students averaged 2.9 trials per instructional session and increasing prompt hierarchy students averaged 3.4 trials per session.

Discussion

This study examined the relative efficiency of two assistance procedures, a constant time delay and an increasing prompt hierarchy, in teaching purchasing skills to four students with severe disabilities. The results indicate that although students mastered the purchasing skills with increasing prompt hierarchy training, time delay was consistently the more efficient strategy.

Close examination of student errors during probe sessions indicates that students who had received increasing prompt hierarchy training did not consistently initiate activity steps. Observations during probe and training sessions suggested that students were waiting for a prompt or cue from the trainer rather than responding to the actual task stimulus. These "waiting" responses occurred on those steps that appeared to be the most difficult for students (e.g., locating the item, ordering the item, or paying). In contrast, when students received time delay training, they were less likely to make initiation errors, and instead would make discrimination or response errors. However, there was no consistent pattern in the type of discrimination or response errors made by students in time delay training.

This finding may have significant implications for instruction in community settings. The inability of teachers to control presentation of task stimuli in these settings increases reliance on prompting and fading procedures to establish stimulus control and teach necessary responses. The addition of teacher prompts during training with students with severe handicaps appears to reduce the salience of actual task stimuli (Etzel & LeBlanc, 1979). The failure of students to initiate task steps following increasing prompt hierarchy training suggests that its structure establishes teacher prompts as the relevant stimuli rather than the actual task stimuli. This situation may minimally increase the time required to establish reliable performance in community settings, and may, in some cases, establish response patterns that would prevent reliable performance of community activities.

Despite the comparatively low rate of errors that occurred in time delay training, the overall percentage of errors to total training responses (i.e., 8.6% in the convenience store and 12.5% in the fast-food restaurant) in this study was substantially higher than the 3% error rate reported by others (Wolery & Gast, 1984). Analysis of the training data indicates that the vast majority of errors in the time delay procedure occurred immediately after the shift from the 0 delay to the "2-s delay" level. This may have occurred for three reasons. First, the criterion for moving from the 0 delay to the 2-s delay level may have been insufficient to establish clear response expectations for students. Perhaps the frequency of errors would have been reduced if a more stringent criterion for movement to the 2-s delay level had been established (e.g., 10 consecutive correct responses versus 3 consecutive correct responses).

Second, the increase in the time interval between delay steps in this study (i.e., 0 delay to 2-s delay) may have allowed unnecessary errors to occur). Walls et al. (1982) found that there were fewer errors committed by adults with mental retardation in the acquisition of vocational assembly tasks with time delay training when delay periods increased at 1 s intervals as opposed to 3- or 5-s intervals. The number of errors that occurred in this study perhaps could have been reduced had the procedure used a three-phased delay procedure based on 1-s increases, rather than the two-phase procedure, which increased the delay interval by 2 s.

Finally, the higher frequency of errors in time delay training may reflect differences between the activities taught in this study and those taught in previous studies. Even though training occurred in a single environment, students still encountered a significant range of stimulus variation across instructional trials and sessions. Some of these changes included the number of people in line at the counters, the verbal requests of cashiers for payment, and variations in the placement of the target items on the shelves in the convenience store. Other studies examining the use of time delay have focused almost exclusively on discrete language or academic responses (Browder, Hines, McCarthy, & Fees, 1984; Halle et al., 1979) or chained behaviors that have little variation in the stimulus conditions across instructional trials and sessions (Snell, 1982; Walls et al., 1982). The frequency of errors in time delay training in this study may simply reflect increased difficulty due to the uncontrollable variation that naturally occurs in community settings.

The design of the current study prevents detailed analysis of the variables that influenced the relative efficiency of time delay and increasing prompt hierarchies in teaching skills in natural performance environments. For example, did the differential effects between the time delay and increasing prompt hierarchy result from the difference in their point of application in the instructional interaction (i.e., antecedent or consequent strategies)? Several recent studies have suggested that antecedent strategies are superior to consequent strategies in establishing stimulus control with individuals with handicaps (Day, 1987; Zane, Walls, & Thvedt, 1981).

In addition, the characteristics of the procedures themselves (i.e., whether assistance is faded along a dimension of time or type of prompt) may have influenced the rate of acquisition. A critical question in evaluating the utility of time delay in community settings is whether it would be as efficient as another antecedent procedure, such as a decreasing prompt hierarchy, which fades assistance along the dimension of assistance type.

The paucity of research in this area creates significant barriers to teachers who are charged with increasing the participation of students with severe handicaps in the community. It is clear that additional research is needed in order to develop guidelines for establishing reliable stimulus control in actual performance environments.

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A Comparison of Time Delay and Decreasing Prompt Hierarchy Strategies in Teaching Banking Skills to Students with Moderate Handicaps

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Running head: PROMPTING STRATEGIES

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Abstract

Four students with moderate handicaps were taught to use an automatic teller and to cash checks through either a decreasing prompt hierarchy or time delay procedure. The strategies were compared within a multielement design. Results indicated that both strategies led to the acquisition of the target tasks, however, the decreasing prompt hierarchy was more efficient. Four and eight week follow-up probes indicated that the strategies were of equal effectiveness in producing maintenance of performance.

A Comparison of Time Delay and Decreasing Prompt Hierarchy Strategies ir Teaching Banking Skills to Students with Moderate Handicaps

The selection of response prompting and fading procedures is an area of primary concern for practitioners in designing instructional programs to teach performance of community activities (Ford & Mirenda, 1984; Snell & Browder, 1986). The strategies used to establish stimulus control in these settings can impact the overall effectiveness and efficiency of instruction. While a number of response prompting and fading strategies have been used effectively with individuals with moderate and severe handicaps, the relative efficiency of these strategies has received little attention (Billingsley & Romer, 1983; Wolery & Gast, 1984).

Research has suggested that antecedent response prompting and fading procedures (i.e., those that minimize errors during training) increase the overall efficiency of instruction (Bennet, Gast, Wolery, & Schuster, 1986; Csapo, 1978; Day, 1987, McDonnell, 1987; Zane, Walls, & Thevdt, 1981). The two most common antecedent prompting strategies are the decreasing prompt hierarchy and time delay (Billingsley & Romer, 1983; Wolery & Gast, 1984). Variations of both strategies have been used to effectively teach a variety of academic, communication, motor, self-help, and vocational skills to individuals with moderate and severe handicaps (Ball, Seric, & Payne, 1971; Browder, Morris, & Snell, 1978; Browder, Hiners, McCartney, & Fees, 1984; Cuvo & Davis, 1983; Halle, Marshall, & Spradlin, 1979; Snell, 1982; Walls, Haught, & Dowler, 1982; Zane, et al, 1981).

Although both decreasing prompt hierarchy and time delay procedures are effective there is no information on the relative efficiency of these strategies in establishing stimulus control of responses in community environments. The present study was designed to compare a decreasing prompt hierarchy procedure to a constant time delay procedure in teaching four students with moderate handicaps to write checks for cash in banks and to use an automatic teller machine.

METHOD

Students

Four students from two high schools and one junior high school program participated in the study. Students ranged in age from 15 to 19 years old (M = 17). All were classified as moderately mentally retarded with I.Q. scores ranging from 39 to 48 (M=40) as measured by the WISC-R. Students 1, 2 and 3 received an average of 2.5 hours of training per day (Range = 1.5 to 3.5 hours) on a wide variety of community activities requiring the use of money (i.e., shopping for groceries, using the mass transit system, using restaurants, etc.). Student 4 did not receive instruction in community settings as part of his educational program. All of the students were able to count combinations of coins and bills with values up to $20. None of the students participating in the study had previously received training on cashing checks in a bank or in using an automatic teller machine.

Activities and Settings

Students were taught to make cash withdrawals of ten and twenty dollars from an automatic teller machine (ATM), or by writing and cashing a check in a bank. Two separate branches of the same bank were used for training. Students 1, 2, and 3 were trained at one branch and Student 4 was trained at a second branch. The physical arrangements of the teller machines and customer lobbies were similar at the two banks.

A 10 step task analysis was developed for use of the automatic teller machine. These steps were inserting the access card, entering the personal identification number, pressing the button indicating that the correct number has been entered, pressing the button to indicate a "withdrawal", pressing the button indicating a withdrawal from a checking account, entering 1000 or 2000 to indicate dollar and cent amount, pressing the "correct" button, lifting the door and removing the bill, pressing the button to indicate end of transaction, and removing access card and receipt from the appropriate slots.

The check writing task was divided into 7 task analysis steps including entering the bank and moving to a table, entering the correct date on check, writing the word "CASH" on the appropriate line, entering the appropriate dollar value (i.e., 10.00 or 20.00), writing the dollar value on the correct line (i.e., TEN and 00/100 or TWENTY and 00/100), signing the check, cashing the check, and exiting the bank. Two of the students (Students 3 and 4) completed the check writing task with the use of a model. Student 3 was provided a card that showed the correct spelling and format for the written dollar values to be entered on the check. Student 4 was provided with a complete model of checks for cash in the amounts of $10 and $20.

Trainers

Two undergraduate students served as trainers for the study. Each trainer received 2 hours of training on instructional and data keeping procedures prior to the initiation of the study.

Data Collection

Three dependent measures were used to assess the relative efficacy of the dec ng prompt hierarchy and time delay procedures. These were (a) student performance on task analysis steps during experimental probe sessions, (b) topography of student errors on task analysis steps during training probe sessions, and (c) number of instructional trials, errors, and training time to criterion.

Task analysis steps. The relative effectiveness of the decreasing prompt hierarchy and time delay procedures was assessed through baseline, training, and follow-up probe sessions. Baseline probes occurred daily on the ATM and check writing tasks until a stable pattern of performance was established. Training probes occurred at the beginning of every second instructional session. Follow-up probes were conducted 4 and 8 weeks following the termination of training.

The use of the ATM and cashing checks for cash during probe sessions was done in isolation rather than as a precursor to other community activities. All probes were initiated by providing the student with the necessary materials to complete the task (e.g., access card, checkbook, pen, etc.) and a verbal prompt (e.g., "Withdraw ___ dollars from the money machine", or "Write and cash a check for ___ dollars"). Students were required to withdraw $10 and $20 during each probe session. Student 3 completed all probes with the aide of a model of the correct spelling and format for the dollar values to be written on the check. Student 4 completed all probes with the aide of a complete model of checks for cash in the amounts of $10 and $20.

With the exception of the step of "signing the check" in the check writing task, when a student made an error during a probe trial the trainer completed the step for the student and then prompted him/her to finish the activity (i. e., "Okay, go on."). This was done in order to allow a comprehensive assessment of the student's performance on all steps of the target tasks. If a student made an error on the step of "signing the check", the trainer physically assisted the student to write their name but provided no other feedback. The student was then prompted to complete the remaining steps of the task. This procedure was used in order to compensate for the requirement by the bank that the individual cashing the check also sign the check. No other assistance or feedback was provided to students during probe sessions. At the end of the probe session, the money withdrawn by each student was returned to the trainer and redeposited into the appropriate account. Student performance was summarized by calculating the percentage of task analysis steps completed correctly during the probe session.

Topography of errors. Three general error types were monitored across training probe sessions: (a) step initiation errors, (b) discrimination errors, and (c) response errors. Step initiation errors were defined as the student not initiating a task analysis step within 5 sec following the presentation of the discriminative stimulus. Discrimination errors included performing a step out of sequence (e.g., signing the check before completing the other responses) or failing to correctly respond to the discriminative stimulus for the task step (e.g., pressing the wrong button). Response errors included incomplete responses or correct responses that were performed too slowly. The distribution of student errors was summarized by topography and response prompting strategy across training probes.

Training measures. Three measures of training assessed the relative efficiency of the two strategies: (a) the average number of training trials required for students to meet the criterion of 100% correct performance of task analysis steps on two consecutive probe sessions, (b) the average number of errors to criterion made by students during training sessions, and (c) the average training time to criterion.

Interobserver agreement. Data on agreement between independent observers were gathered on student performance during 100% of the baseline probe sessions, 73% of the training probe sessions, and on 100% of the follow-up probe sessions. An agreement was only recorded if both the trainer and observer recorded the student's performance on the task analysis step as either correct or incorrect. Observer agreement was calculated by dividing the number of agreements by the number of agreements plus disagreements and multiplying by 100. Mean interobserver agreement across all probe sessions was 95%, with a range of 90% to 100%.

Design

The study utilized a multi-element experimental design (Tawney & Gast, 1984). Tasks and interventions were counterbalanced across subjects to avoid potential ordering effects, and task by treatment interactions. Experimental phases included baseline, decreasing prompt hierarchy training, time delay training, and follow-up. Decreasing prompt hierarchy and time delay training procedures were alternated daily through out the course of the study. Training was terminated when a student performed the steps of both task analyses correctly on two consecutive probe sessions.

Procedures

Baseline. The number of baseline probe sessions conducted with students varied. Baseline probes were conducted daily on both tasks until a stable pattern of performance was established for each student.

Decreasing prompt hierarchy training. The decreasing prompt hierarchy was designed to provide assistance to the student prior to completion of each step in the task analysis. Assistance was faded by systematically reducing the level of prompt provided to students on each step of the task analysis. The generic steps of the hierarchies used for each task were (a) physical assistance plus direct verbal cue, (b) point plus direct verbal cue or model plus direct verbal cue, (c) direct verbal cue, and (d) gesture.

The initial prompt provided to students on the various steps of the task analyses was determined during baseline probe sessions. Prompts were faded after 2 consecutive correct trials. Correct responses following prompts were praised. If students made an error, they were prompted through the task step providing the level of assistance necessary to ensure a correct response.

Training sessions were 20 minutes in length. The number of training trials provided to students during sessions ranged from two to six. Students received at least one trial on each of the two target amounts (i.e., $10 and $20) during each training session.

Time delay training. Time delay training differed from the decreasing prompt hierarchy in that the level of prompt provided to students did not change across instructional trials or sessions. Instead, prompts were faded by inserting a temporal delay between the presentation of the discriminative stimulus and the trainer's prompt. The specific prompts used for time delay training were selected from the decreasing prompt hierarchies designed for each task. The level of prompt provided to students varied based on their performance during baseline probes.

In phase one of time delay training, the trainer presented the designated prompt for each step of the task analysis immediately following the presentation of the discriminative stimulus (zero delay level). Following 2 consecutive correct trials at the zero delay, the trainer moved to phase two of the procedure in which the prompt for the step was delayed for a 3 sec count following the presentation of the discriminative stimulus. This delay period was selected based on the average inter-step response latency of nonhandicapped individuals in completing the ATM and check writing tasks.

Students were praised for independently initiating and correctly completing task analysis steps. Students were provided with feedback (i.e., "That's the right way." or "Okay.") following prompted responses. Following an error, students were prompted through the task step providing the level of assistance necessary to ensure a correct response.

Training sessions were 20 minutes in length. The number of training trials presented to students during each instruction session ranged from two to six trials. Students were provided at least one trial on each of the two target values (i.e., $10 or $20) during an instructional session.

Follow-up. Maintenance of performance was assessed through two follow-up probes. The first follow-up probe was conducted 4 weeks after the termination of training. The second probe was conducted 8 weeks following the termination of training. The procedures for the follow-up probe sessions were identical to those described for the baseline and training probe sessions.

Fidelity of Training

Information on the fidelity of the trainer's use of the decreasing prompt hierarchy and time delay procedures was gathered on 37% of all training sessions. During the session, the congruence of the trainers prompts with the specified prompting procedures was recorded as either correct or incorrect. A trainer's prompt was considered correct if the prompt (a) matched the level of prompt designated for the step of the task analysis and (b) was delivered within designated time limits. Prompts were considered incorrect if either of these two conditions were violated. The level of training fidelity was calculated by dividing the total number instances in which the trainer prompted correctly, divided by the number of correct plus incorrect prompts and multiplying by 100. Training fidelity ranged between 92% and 100% across trainers and observations, with a mean of 97%.

RESULTS

Figure 1 presents the percent of task analysis steps completed correctly by students during all probe sessions. Performance during Baseline on the use of the ATM ranged from 0 to 17% correct. Performance on writing and cashing checks ranged from 0 to 38% correct.

Both the decreasing prompt hierarchy and the time delay procedure resulted in reliable performance of ATM and check writing tasks. During the 4 week follow-up probe Student 1 performed 90% of the steps of the ATM task following time delay training. Students 3 and 4 performed 100% of the steps correct following decreasing prompt hierarchy training. On the check writing task student 1 performed 86% steps correctly following decreasing prompt hierarchy training. Students 3 and 4 completed 100% and 80% of the task step correctly following time delay training. Student 2 was not available for the 4 week follow-up probe.

Insert Figure 1 about here

During the 8 week follow-up, Students 1 and 2 performed 100% and 80% of the steps of the ATM task correctly following time delay training respectively. Students 3 performed 100% of the steps and Student 4 completed 80% of the steps of the ATM task following decreasing prompt hierarchy training. Student 1 performed 76% and Student 2 completed 100% of the check writing task steps correctly following decreasing prompt hierarchy training. Students 3 and 4 performed 100% and 80% of the task steps correctly following time delay training, respectively.

The average number of step initiation, discrimination, and response errors made by students receiving decreasing prompt hierarchy training on the ATM was 8.5, 3.5, and 1 respectively. In contrast, students receiving time delay training had an average of 12 step initiation errors, 5.5 discrimination errors, and 3.5 response errors. The average number of step initiation, discrimination, and response errors made by students who received decreasing prompt hierarchy training on the check writing task was 3.5, 8, and .5 respectively. Students who received time delay training on the check writing task made an average of 6 step initiation errors, 7.5 discrimination errors, and .5 response errors. While the actual number of errors made by students receiving time delay training was higher across both tasks, there did not appear to be significant differences between groups in the relative distribution of errors.

Table 1 presents data on training measures by task and intervention. The average number of training trials, errors, and time in instruction for students who received time delay training on the check writing task was 34, 18.5, and 280 respectively. In comparison, students receiving decreasing prompt hierarchy training required 22.5 trails to criterion, made an average of 15.5 errors during training sessions, and required 220 minutes of instruction to master the check writing task.

Insert Table 1 about here

A similar pattern in the relative efficiency of the time delay and decreasing prompt hierarchy training procedures was found in use of the ATM. Students who received time delay training required 38.5 trials to criterion, made 31 errors, and required 300 minutes of instruction. Students who received decreasing prompt hierarchy training required 27.5 trials to reach criterion, made and average of 15.5 errors, and received 210 minutes of instruction.

DISCUSSION

This study examined the relative efficacy of a decreasing prompt hierarchy and a time delay procedure in teaching students with moderate mental retardation to use an automatic teller machine and to write checks to obtain cash. The results indicate that both strategies led to the acquisition of the tasks. However, the decreasing prompt hierarchy appeared to be more efficient in establishing performance than the time delay procedure. Students who received time delay training on the ATM required 38% more training trials and 42% more time in instruction than those students who received decreasing prompt hierarchy training. Similarly, students who received time delay training on the check writing task required 48% more training trials and 27% more time in training to reach criterion.

The difference in the relative efficiency of these two strategies might be related to the structure of the time delay procedure used in this study. Walls, et al (1982) found that time delay procedures which increased the delay interval in 1 second intervals across multiple training steps were much more efficient in establishing performance than when the delay period was increased in 3 sec or 5 sec intervals. The use of the two step training procedure in this study, in which the delay period was increased from a zero delay to a 3 sec delay, may have resulted in a methodological bias toward the decreasing prompt hierarchy. Had the delay periods been increased in multiple, 1 sec increments the time delay procedure might have been more efficient than the decreasing prompt hierarchy. This weakness may limit generalizations about the relative efficiency of all decreasing prompt hierarchy and time delay procedures.

Our use of the two phased training procedure was an effort to reduce the overall complexity of time delay training. Other researchers have noted that the time delay procedure is often difficult to implement in behavior chains (Billingsley & Romer, 1982; Snell, 1982; Walls, et al, 1982; Wolery & Gast, 1984). The complexity of the time delay procedure used in this study was assessed in a written questionnaire provided to the trainers following the study. The trainers indicated that the time delay procedure was much more difficult to implement than the decreasing prompt hierarchy. They also indicated that if they were given the option they would select the decreasing prompt hierarchy over the time delay procedure. This raises an important issue for programs that may utilize paraprofessional staff who have limited training and experience in carrying out community-based instruction.

Follow-up data were mixed across the four students participating in the study. It is important to note that clearer trends in the student's maintenance of the check writing and ATM tasks might have been established had additional follow-up probes been completed. In addition, it is possible that differences in skill maintenance would have been observed had follow-up probes been conducted over a longer period of time.

Finally, the small number of students in the study limits extent to which inferences may be made about the relative efficiency of all decreasing prompt hierarchy and time delay procedures. The decreasing prompt hierarchy may not prove to be more efficient with individuals with more severe handicaps or in more complex community activities.

The paucity of information in the selection of response prompting and fading strategies creates significant difficulties for teachers who work with students with moderate and severe handicaps. This study suggests that the decreasing prompt hierarchy is equally as efficient in establishing performance complex chains as a constant time delay procedure and is easier for trainers who lack experience in conducting community-based instruction to implement. Additional comparative research is needed to establish guidelines for selecting response prompting and fading strategies in community settings. The development of such guidelines is critical to increasing the participation of individuals with moderate and severe handicaps in the community.

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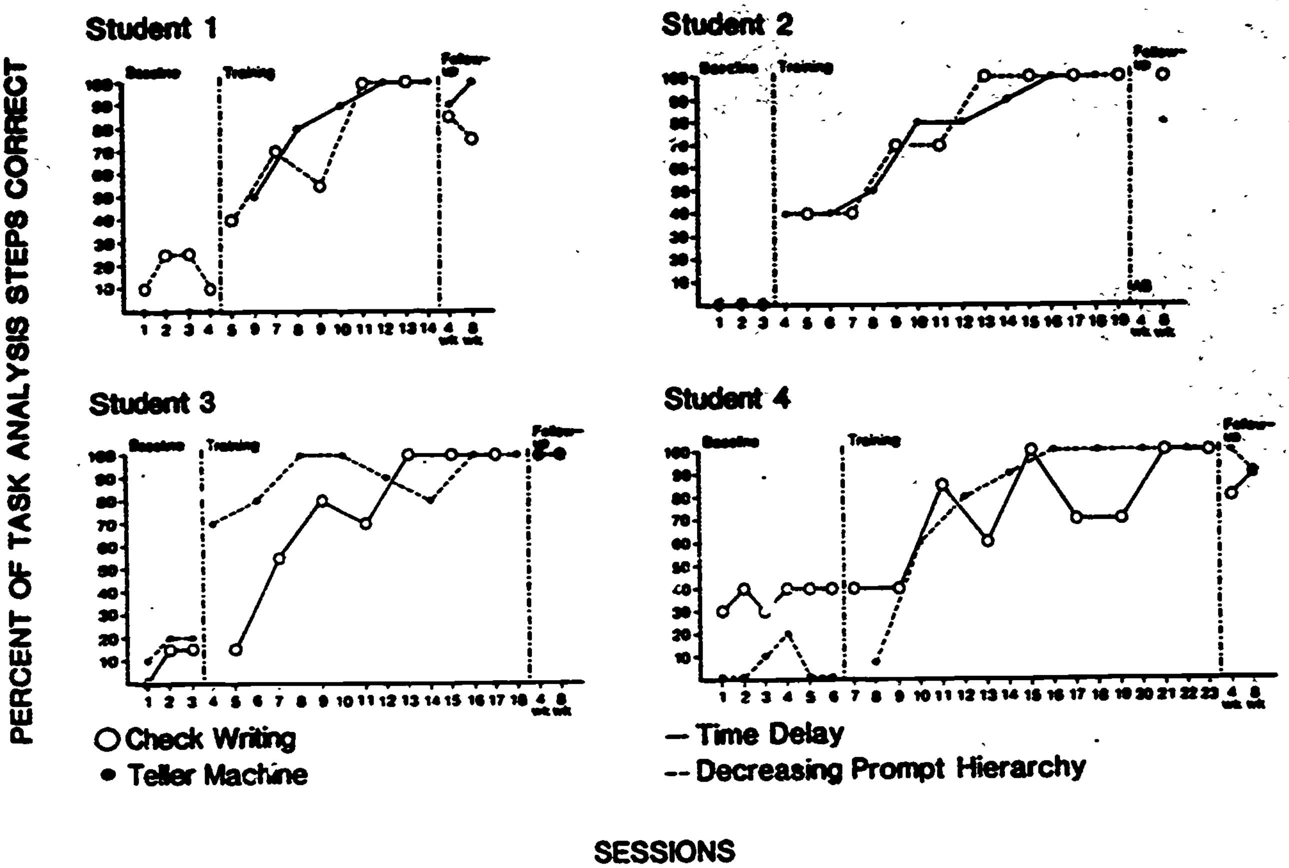
Table 1

Number of training trials, errors, and time to criterion

	Automatic Teller			Check Writing		
Intervention	Trials	Errors	Time	Trials	Errors	Time
Time Delay	34	18.5	280	38.5	31	300
Decreasing Prompt Hierarchy	22.5	15.5	220	27.5	15.5	210

Figure Notes

Figure 1. Percent of Task Analysis Steps Performed Correctly During Experimental Probe Sessions



PERCENT OF TASK ANALYSIS STEPS CORRECT
Student 1
Baseline
Training
Follow-up
Student 2
Student 3
Student 4
Check Writing
Teller Machine
— Time Delay
-- Decreasing Prompt Hierarchy
SESSIONS

Attachment C

Research Reports for Studies Examining Strategies for Building Performance of Complex Chains of Behavior in Community Settings

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A Comparison of Forward and Concurrent Chaining Strategies in Teaching Laundromat Skills to Students with Severe Handicaps

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This study compared the relative efficiency of forward and concurrent chaining strategies in teaching the use of a commercial washing machine and laundry soap dispenser to four high school students with severe handicaps. Acquisition and maintenance of the laundromat skills were assessed through a multielement, alternating treatment within subject design. Results indicated that the concurrent chaining strategy was more efficient than forward chaining in facilitating acquisition of the activities. Four week and eight week follow-up probes indicated that concurrent chaining resulted in better maintenance of the activities. The implications of these results for teaching community activities and future research in building complex chains are discussed.

The participation of students with severe handicaps in cor ... y settings requires reliable performance of complex chains of behavior under varying conditions. In order to establish reliable performance of chains, like shopping for groceries or operating a commercial dishwasher, the teacher must establish stimulus control over individual steps of the chain and link them together so that they are performed in a fluent sequence. The two general

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strategies recommended for developing chained behaviors with students with severe handicaps are serial and concurrent chaining (Gaylord-Ross & Holvet, 1985; Sailor & Guess, 1983; Snell, 1983).

In serial chains the steps of the chain are cumulatively introduced to the student over successive instructional trials. Steps of the chain can be introduced in their natural order of performance from the beginning to the end of the chain. This process is called forward chaining. Alternately, steps of the chain can be introduced in reverse order starting with the last step of the chain moving towards the first step. This method is called backward chaining. In each of these strategies, steps of the chain are taught to a prespecified performance criterion before the next one is added to the sequence. In concurrent chaining all steps of the chain are introduced simultaneously. Every step of the task analysis is performed in each instructional trial.

All three of these strategies have been used effectively to teach a variety of self-help and motor skills to students with severe handicaps (Baldwin, Fredericks, & Brodsky, 1973; Bunker & Moon, 1983; Wilson, Reid, Phillips, & Burgio, 1984). In addition, these strategies have been used to teach vocational, personal management, and leisure activities in community settings (Certo, Mezzulo, & Hunter, 1985; Cuvo, Jacobi, & Sipko, 1981; Cuvo, Leaf, & Borakove, 1979; Duffy & Nietupski, 1985; Gaule, Nietupski, & Certo, 1985; Gruber, Reeser, & Reid, 1979; Schleien, Certo, & Muccino, 1984; Sowers, Rusch, & Hudson, 1979; Storey, Bates, & Hanson, 1984). Although, the forward and concurrent chaining strategies have been the most widely utilized in teaching community skills (Nietupski, Hamre-Nietupski, & Ayres, 1984; Snell & Browder, 1986).

Research examining the relative efficiency of serial and concurrent chaining strategies is extremely limited. Those studies that have been completed have generally focused on teaching vocational assembly tasks to adults with moderate and severe handicaps under very controlled experimental conditions. The results of these studies have been mixed, although favoring concurrent chaining (Kayser, Billingsley, & Neel, 1986; Spooner, 1981; Spooner & Spooner, 1984; Spooner, Weber, & Spooner, 1983; Walls, Zane, & Ellis, 1981; Zane, Walls, & Thvedt, 1981).

The confusion over which of these strategies is the most efficient has lead to discrepant recommendations in leading textbooks used for training teachers of students with severe handicaps. One group of researchers favors serial strategies (Sailor & Guess, 1983). This recommendation is based on the premise that the demands associated with simultaneously learning all necessary discriminations and responses of a chain are far too great for most individuals with severe handicaps. This situation is believed to result in an increased number of errors during training, thus reducing the overall efficiency of instruction.

The second group of researchers support the use of concurrent chaining (Gaylord-Ross & Holvet, 1985; Snell, 1983; Wilcox & Bellamy, 1982). This recommendation is based on two general arguments. The first is that the structure of backward and forward chaining procedures artificially reduce the efficiency of instruction. The structure of these strategies usually require students to meet a preestablished performance criterion (e.g., five consecutive correct responses) on the step in training, before the next step of the chain is added for instruction. These authors note that students with severe handicaps are often able to perform some steps of the task analysis before instruction. The result is that the cumulative number of instructional trials required to establish performance of the chain is unnecessarily inflated because students are provided redundant training trials on previously mastered steps. They argue that the most efficient strategy would be one in which performance of mastered steps was immediately reinforced, and training focused on steps of the chain that the student could not perform. This would suggest the use of concurrent chaining or a similar strategy.

The second argument is that forward and backward chaining are less conducive to training in actual performance environments. The nature of these settings and activities frequently demand that all steps of a chain be completed during each instructional trial or session. Serial chaining strategies require the student to complete only a portion of the chain. In many cases, this approach is simply not feasible because of the performance demands of the task (e.g., teaching street crossing) or impractical from an instructional perspective (e.g., bussing tables).

At the present time, teachers of students with severe handicaps have little guidance for selecting strategies for building complex chains in the community (Snell & Browder, 1986). The decision to utilize serial or concurrent chaining strategies, to teach community skills, is now based solely on the teachers own experience and training. There are no empirically validated guidelines to assist in determining the most efficient strategy for teaching community activities. Given the costs associated with training in the community, comparisons of the relative efficiency of various chaining strategies appear to be both logical and timely.

The present study was designed to compare the relative efficiency of the two most frequently utilized approaches for teaching chains in community settings. These are forward and concurrent chaining. The efficiency of these strategies was assessed in teaching laundromat skills to four students with severe handicaps.

METHOD

Subjects

Four high school students, with severe handicaps, participated in the study. These subjects ranged in age from 16 to 19 years old with a mean age of 17 years. All subjects were classified as moderately or severely mentally retarded with IQ scores ranging between 29 and 40, and a mean IQ of 33, as measured by the Wechsler Adult Intelligence Scale--Revised (WAIS-R). All of the students participating in the study were nonverbal or had unintelligible speech. However, all of the students could follow simple verbal directions. In addition, all of the students were ambulatory. Students were selected for the stuoy based on their classroom teacher's evaluation of the correspondence between the targeted training activities and the student's existing Individualized Education Program (IEP) goals. None of the students had received training on the targeted activities prior to the initiation of the study.

Activities and Settings

Students were taught to use a commercial washing machine and a laundry soap dispenser. The task analysis for the use of the commercial washing machine consisted of six steps, including locating an empty machine, adding the soap, loading the clothes, setting the wash cycle, inserting the four quarters into the coin slide, and activating the machine. Use of the laundry soap dispenser required performing six steps including, locating the machine, identifying the correct laundry soap, moving the selection bar to the correct position, inserting one quarter and one dime into the coin slot, activating the machine, and retrieving the soap. The steps of the task analysis were reviewed by the manager of the laundromat in which training occurred in order to validate the task steps and sequence.

Students participating in the study lived in a small rural community. The laundromat used as the training site was the only laundromat located in the community or surrounding area. One parent reported that she used the laundromat on a regular basis, and the remaining parents reported that they had used it in emergency situations. As such, the laundromat represented a socially valid performance setting for all students participating in the study.

Trainers

Two students enrolled in a special education teacher training program served as trainers for the students. Each trainer had previous experience working with individuals with severe handicaps. Trainers were provided two hours of training on instructional and data collection procedures prior to the initiation of the study. The fidelity of the trainers use of instructional procedures was assessed on, at least, a weekly basis throughout the course of the study.

Measures

Three measures were used to evaluate the relative efficacy of the forward and concurrent chaining procedures. These included (a) student performance of activity steps during experimental probe sessions, (b) student errors on steps of the task analysis during probe sessions, and (c) the number of instructional trials and errors to criterion.

Student performance of activity steps. The effectiveness of the forward and concurrent chaining strategies, in establishing reliable performance of the chain, was assessed through training and follow-up probes. Training probes were conducted with each student following every third instructional session on the washer or soap dispenser. Follow-up probes occurred four and eight weeks following the termination of training on both activities.

A probe consisted of a single trial on the target activity. Probe sessions were initiated by providing the student with the materials necessary to complete the activity (i.e., clothing, soap, and coins for the washer, or coins for the soap dispenser) and a verbal prompt (i.e., "Go wash the clothes" or "Go buy Tide"). Students were provided no assistance or feedback during probe sessions. Student performance on each step of the chain was recorded as either correct or incorrect.

A student's response was considered correct if he/she completed a chain step correctly and without teacher assistance. A student's response was considered incorrect if he/she did not initiate the step within five seconds or completed the step inaccurately. When errors occurred, the trainer would stop the student and complete the step for him/her. The student was then provided an indirect verbal prompt to complete the remaining activity components (e.g., "Okay, go on"). Student performance was summarized by calculating the percentage of task analysis steps completed correctly during each probe session.

Student errors during probe sessions. The type and frequency of student errors, on trained chain steps, were tracked across all probe sessions. The range of potential errors for each task analysis step included step initiation errors, discrimination errors, and response errors. A step initiation error was defined as the student not beginning the step within five seconds following completion of the previous task analysis step. Discrimination errors included performing steps out of sequence (e.g., pushing the coin slide before inserting the coins) or failing to respond to a discrete environmental stimulus (e.g., not turning the dial to the correct cycle or selecting the wrong detergent). Response errors were dysfunctional responses that prevented successful completion of the task analysis step (e.g., not pushing the coin slide all the way in or not opening the detergent box all the way).

Errors were summarized across task analysis steps, students, and probes by type of error. This summary only included errors on task analysis steps on which students had received training. This information was used to calculate conditional probabilities for the occurrence of each type of error following forward or concurrent chain training.

Finally, the cumulative frequency of student errors on each step was tracked across probe sessions. The measure provided a summary of each student's errors, during probes, by task analysis step and chaining strategy.

Number of training trials and errors to criterion. These measures focused on the relative efficiency of forward and concurrent chain training. In concurrent chain training a "trial" consisted of the student's assisted or unassisted completion of all steps of the task analysis. In forward chain training, a trial consisted of assisted or unassisted completion of the steps of the task analysis in training.

Errors were counted by task analysis step. In other words, any incorrect response on a task analysis step was considered an error. In concurrent chain training the maximum number of errors a student could make in a single trial was six. In forward chain training, the maximum number of errors a student could make, in an instructional trial, equaled the total number of steps in training. The established criterion, for demonstrated mastery of use of the washer and soap dispenser, was independent performance of all task analysis steps on two consecutive probe sessions.

Procedures

Design. The study employed a multielement, alternating treatment, within subject design (Tawney & Gast, 1984). Tasks and strategies were counterbalanced across subjects to avoid potential ordering effects, and task by treatment interactions. Student 1 received forward chain training on use of the washer on the first instructional session. On the next session he received concurrent chain training on use of the soap dispenser. For Student 2, forward chain training on use of the soap dispenser was alternated with concurrent chain training on use of the washer. Student 3 received concurrent chain training on the soap dispenser alternated with forward chaining on the washing machine. Student 4 received concurrent chain training on the washer and forward chain training on the soap dispenser. Students continued to receive training until they were able to perform both activities without teacher assistance on two consecutive probe sessions. The specific phases of the study were Baseline, Forward Chain Training, Concurrent Chain Training, and Follow-up.

Baseline. Baseline probes for each activity were conducted during two sessions separated by three school days. These probes followed the same procedures described above.

Forward chain training. In the forward chaining strategy, steps of the task analysis were cumulatively introduced to the student starting with the first step and moving to the last. New steps of the chain were introduced following independent performance on three consecutive instructional trials. For example, in learning to use the soap dispenser, students were first trained to locate the machine in the laundromat. Training continued on this step until the student was able to independently locate the machine on three consecutive trials. The second chain component, selecting the correct soap, was then added to the sequence. Training continued on these two components until the student could independently locate an empty machine and select the correct detergent on three consecutive trials. Remaining task analysis steps were added to the chain using this same procedure.

Concurrent chain training. In this strategy, the student was required to complete all steps of the task analysis in an instructional trial. Students were trained to complete task steps using the same response prompting, error correction, and reinforcement and procedures used in the forward chain training package. Students were socially reinforced for independent performance of task steps. Students were provided three training trials on the entire chain during each session.

Follow-up. Maintenance of performance was assessed through two follow-up probes. The first follow-up probe was conducted four weeks after the termination of training on both activities. The second probe was conducted eight weeks following the termination of training. The procedures used during follow-up probes were identical to those described for the training probes.

Fidelity of Training and Interobserver Agreement During Probe Sessions

The fidelity of instructional procedures was gathered during 24% of all training sessions. Prior to each observation, the second author reviewed the student's training data and identified the steps in the chain currently in training and the level of assistance to be provided on each step of the task analysis. During the training session, the trainer's use of instructional procedures was assessed on each step of the task analysis. The trainer's behavior was correct if the level of prompts provided to the student matched those indicated by his/her progression through the decreasing prompt hierarchy.

The trainer's behavior was considered incorrect if he/she did not provide the correct level of assistance.

Fidelity of training was calculated for each session by dividing the number of task analysis steps, in which the trainer had provided the correct level of assistance, by the total number of correct plus incorrect steps and multiplying by 100. The fidelity of training for the forward chaining procedures ranged between 83% and 100% with a mean of 96%. The fidelity of training for the concurrent chaining procedure ranged from 76% to 100% with a mean of 92%.

Interobserver agreement was calculated for student performance of task analysis steps and errors during all training and follow-up probes. Interobserver agreement for performance of activity steps was calculated by dividing the total number of agreements by the total number of agreements plus disagreements multiplied by 100. An agreement was recorded only when both the trainer and the observer scored the students performance of the step as correct or incorrect. Interobserver agreement for training probes ranged between 73% and 100%, with a mean of 98% across both activities. Interobserver agreement during follow-up probes was 100%.

Interobserver agreement was calculated on student errors during training and follow-up probes in the same manner. Interobserver agreement for errors during training probes averaged 96% across all training probes with a range of 89% to 100%. Interobserver agreement on student errors during follow-up probes was 100%.

RESULTS

Performance of Activity Steps

Student performance of task analysis steps during baseline, on both the soap dispenser and washing machine activities, ranged from 0% to 17% correct (Figure 1). With the exception of Student 4, both the forward and concurrent chaining strategies resulted in independent performance of the targeted activities. Student 4 was able to perform 83% of the task analysis steps for the soap dispenser following forward chain training. Training was terminated prematurely on the soap dispenser for Student 4 because of family vacation plans.

The average percentage of correct task steps on the soap dispenser, during concurrent chain training, was 86% for Student 1 and 92% for Student 3. During forward chain training Student 1 performed an average of 67% of the steps of the washer activity and Student 3 performed 62%. Student 2 performed an average of 87% of the steps of the washing machine activity during concurrent chain training and 61% of the soap dispenser activity during forward chain training.

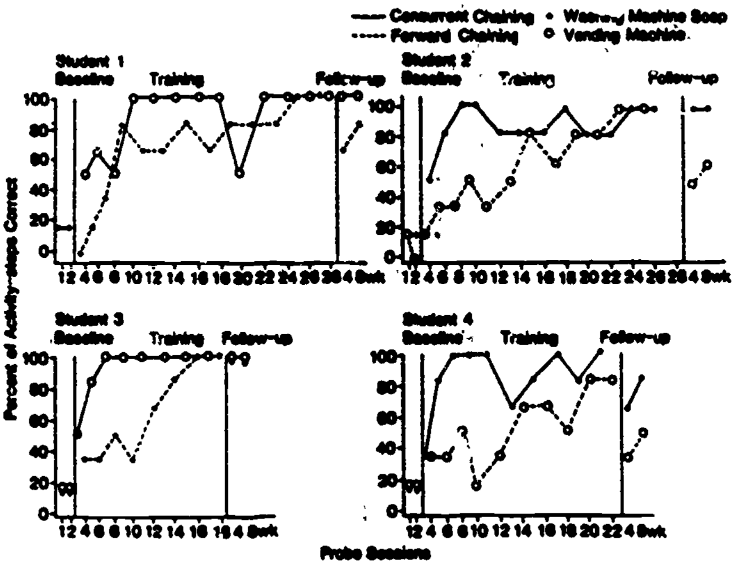

FIGURE 1. Performance during training and follow-up probes.

At the four week follow-up, Students 1 and 3 independently performed all steps of the soap dispenser task analysis after they had received concurrent chain training. Student 1 performed 67% and Student 3 performed 100% of the steps of the washing machine task analysis during the four week follow-up after forward chain training. Student 2 independently performed 100% of the washer task analysis steps during the four week follow-up after concurrent chain training and 50% of the steps of the soap dispenser task analysis steps following forward chain training. Student 4 performed 66% of the steps of the washing machine task analysis after concurrent chain training and 33% of the steps of the soap dispenser task analysis after forward chain training.

At the eight week follow-up Students 1 and 3 performed 100% of the steps of the soap dispenser task analysis after concurrent chain training. After forward chain training, Students 1 and 3 performed 83% and 100% steps of the washer task analysis independently. Student 2 performed 100% steps of the washing machine task analysis after concurrent chain training and 67% of the steps of the soap dispenser task analysis after forward chain training. Student 4 independently performed 83% of the steps of the washer task analysis following concurrent chain training and 50% of the soap dispenser task analysis steps following forward chain training.

Student Errors During Probe Sessions

Figure 2 presents probabilities of step initiation, discrimination, and response errors during baseline and training probe sessions. These data indicate no differential effect between the general types of errors made by students following forward and concurrent chain training.

Figures 3 and 4 present the cumulative frequency of student errors for each step of the task analyses across all probes. The white bars indicate the activity components that had been added to the chain for training prior to each probe session. The numbers and arrows indicate the probe prior to which the student had performed the step without teacher assistance during training. Close examination of Figures 3 and 4 indicate that forward chain training resulted in more errors during probe sessions than concurrent chain training. In addition, there was a substantial time lag between the introduction of task analysis steps and students meeting the step training criterion (i.e., three consecutive correct responses) during forward chaining.

Number of Training Trials and Errors to Criterion

Table 1 summarizes the number of training trials and errors to criterion for each student. The average number of training trials required for students to meet criterion on the use of the washer in concurrent chaining was 36. In forward chaining the average number of trials to criterion was 95. Students made an average of 51 errors on steps in training during concurrent chaining and 104 during forward chaining.

The average number of training trials to criterion on use of the soap

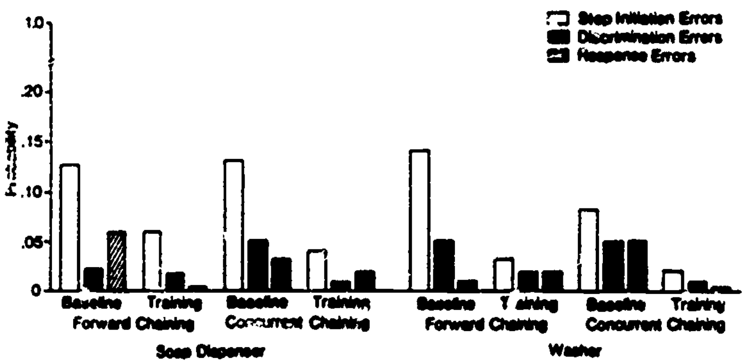

FIGURE 2. Probability of errors across students and probes.

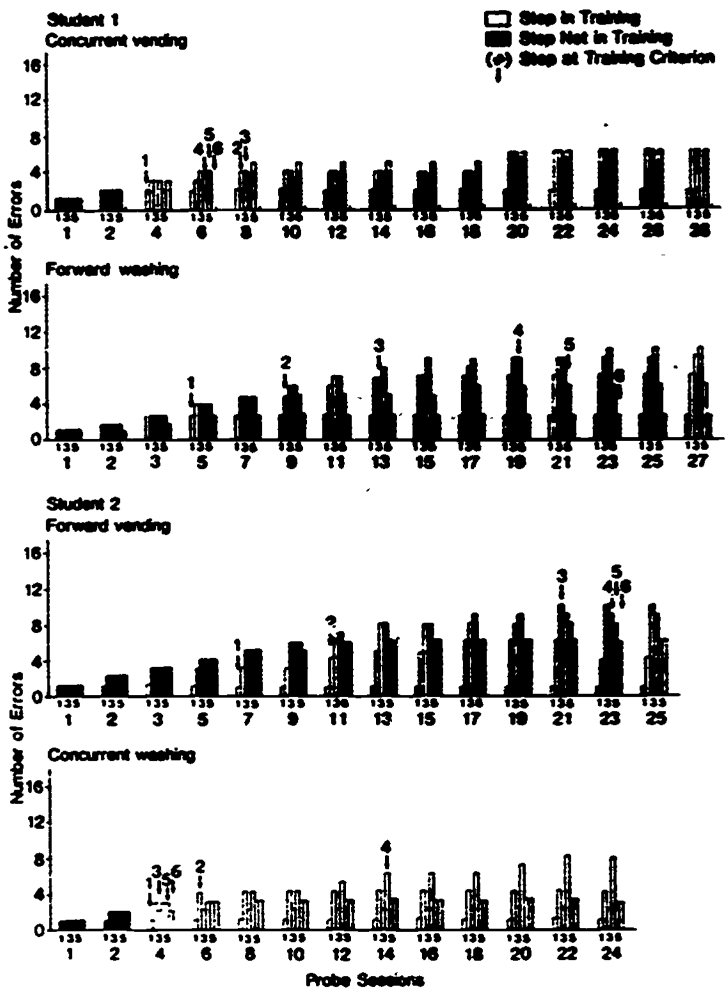

FIGURE 3. Cumulative frequency of errors by activity component for Students 1 and 2.

dispenser in concurrent chaining was 41. In comparison, Student 2 required 108 trials to criterion in forward chain training. The average number of errors to criterion in concurrent chaining was 59. Student 2 made a total of 97 errors during forward chain training. Student 4 did not complete training in forward chaining.

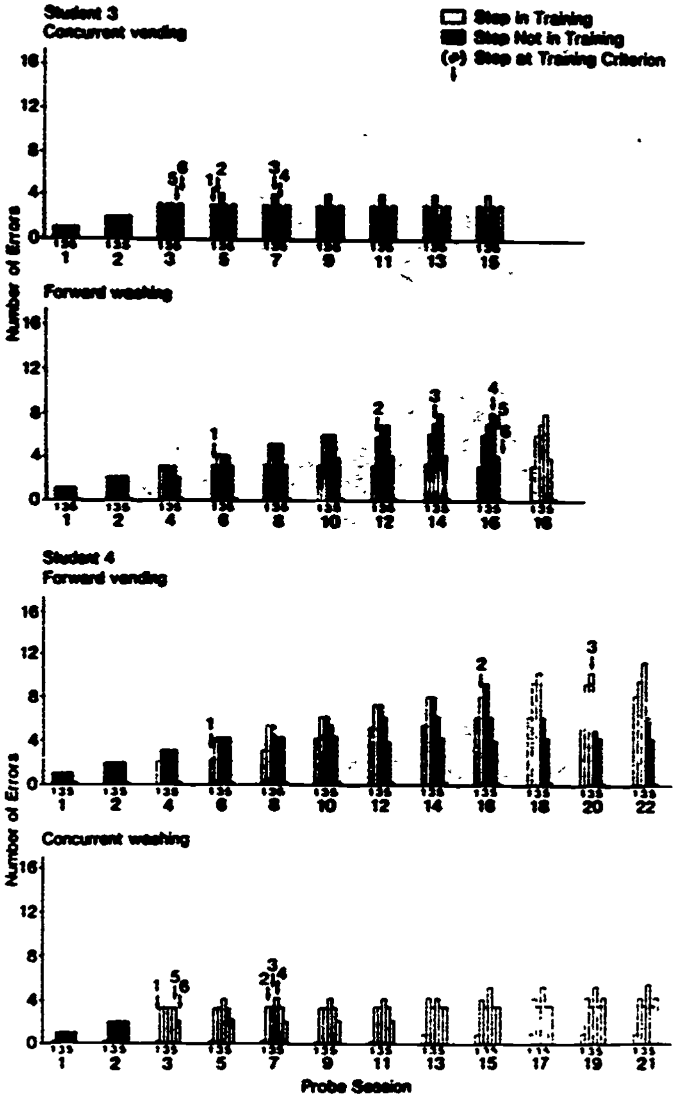

FIGURE 4. Cumulative frequency of errors by activity component for Students 2 and 4.

TABLE 1.
Number of Training Trials and Errors to Criterion

Student	Forward Trials	Forward Errors	Concurrent Trials	Concurrent Errors
	Soap Dispenser			
1	–	–	45	112
2	108	97	–	–
3	–	–	36	46
4	Not completed.		–	–
	Washing Machine			
1	117	112	–	–
2	–	–	36	45
3	72	96	–	–
4	–	–	36	57

DISCUSSION

This study examined the relative efficiency of forward and concurrent chaining strategies in teaching laundromat skills to students with severe handicaps. While both strategies resulted in reliable use of a laundry soap dispenser and commercial washing machine, the concurrent chaining strategy was more efficient. In fact, the number of training trials required to establish reliable performance of these activities with forward chain training was more than double that of the concurrent chaining strategy. The concurrent chaining strategy also resulted in better maintenance of activity performance than forward chain training.

The results also indicate that students who received forward chain training made substantially more errors than students who had received concurrent chain training. This difference is somewhat surprising given that forward chaining is designed to reduce the number of errors students make during acquisition (Gaylord-Ross & Holvet, 1985; Sailor & Guess, 1983). There are three possible explanations for this difference. First, it is possible that forward chain training produced specific error patterns that interfered with the development of reliable stimulus control of the chain (Bellamy, Horner, & Inman, 1979; Horner, Bellamy, & Colvin, 1984). Analysis of student errors during probes, however, indicated no significant differences in the probability of step initiation, discrimination, or response errors between forward and concurrent chain training. As such, it is unlikely that the difference in the number of errors between these two strategies is attributable to error topographies developed only by forward chain training.

The second alternative is that the structure of the forward chaining strategy did not facilitate the development of reliable stimulus control. Establishing reliable stimulus control in chains requires that task stimuli serve as both a discriminative stimulus for the next step in the chain as well as a conditioned reinforcer for the previous step. A critical variable in establishing this dual stimulus function is the delivery of reinforcers at the end of the chain (Kelleher, 1966; Milleson, 1967). When chain performance is in extinction, or punished, stimulus control over individual steps of the chain deteriorates and ultimately leads to a break down in chain performance (Kelleher, 1966; Milleson, 1967).

When a new step is added to the chain for instruction, during the forward chaining strategy, the trainer provides assistance and feedback to the student in order to establish the new response. During this period, the student may have repeated instructional trials in which they are not reinforced, and may in fact receive mild punishers (e.g., "No, put it in this way") for incorrect performance of the newly introduced step. While these procedures are necessary to establish the new response, the may also create mild punishment conditions which weakens stimulus control of components that proceed the step that is in training.

One way to determine whether or not the structure of forward chaining weakens stimulus control over previously introduced step is to examine the frequency of errors on activity components following the introduction of each new step. Table 2 summarize these data by student and activity. It is interesting to note two patterns in the data. First, there is a general decline in the number of errors on components at the beginning of the chain with the addition of each step. Second, the frequency of errors is generally higher on those components closest to the step in training.

Logically, task steps closest to the new step would be more sensitive to extinction or punishment, simply because they had not been in training as long as those steps at the beginning of the chain. These data tend to suggest that the structure of forward chaining may create a situation in which previously trained steps are alternately reinforced, and then punished, as each step of the chain is introduced for training. This would have the functional effect of weakening stimulus control within and across steps of the chain. As such, the difference in the efficiency of forward and concurrent chaining may reflect only the need to continually reestablish stimulus control of steps across instructional sessions in forward chain training.

The final explanation for the difference in the relative efficiency of forward and concurrent chaining is that forward chaining promoted the development of competing behaviors which interfered with acquisition. This general hypothesis was also supported in this study by the reports of trainers that Students 1, 2, and 4 were, at times, noncompliant during forward chain training. The rate of noncompliant behaviors appeared to increase after

TABLE 2.
Number of Errors on Trained Steps Following Introduction of New Steps (Forward Chaining)

Washer

Student 1

Previously Trained Steps	Step in Training 1	2	3	4	5	6
1	-	2	1	1	1	0
2		-	4	5	4	2
3			-	7	6	3
4				-	8	5
5					-	3
6						

Soap Dispenser

Student 2

Previously Trained Steps	Step in Training 1	2	3	4	5	6
1	-	1	3	2	0	0
2		-	10	2	1	1
3			-	6	3	4
4				-	3	4
5					-	5
6						

Student 3

Previously Trained Steps	Step in Training 1	2	3	4	5	6
1	-	2	1	1	0	0
2		-	3	1	1	1
3			-	3	1	1
4				-	4	1
5					-	2
6						

Student 4

Previously Trained Steps	Step in Training 1	2	3	4	5	6
	-	8	4	3		
2		-	15	10		
3			-	15		
4						
5						
6						

numerous instructional sessions on difficult steps of the task analysis (e.g., locating the Tide or setting the wash cycle).

The development of interfering behaviors, like noncompliance, may be related to the repetitive structure of forward chaining. When students are required to complete previously mastered components over and over again, without being allowed to complete the chain, it is not surprising that they become frustrated with the instructional context. Given the fact that students participating in this study did not demonstrate noncompliant behavior during concurrent chain training, it is logical to assume that these behaviors are linked to the repetitive nature of forward chaining. While it is not possible to determine the exact influence these behaviors had on the acquisition of individual activity components, it is reasonable to assume that they reduced the overall efficiency of forward chain training.

Limitations of the Study

While this study indicates that concurrent chaining was more efficient than forward chaining, the results must be interpreted cautiously in light of two limitations. These are:

1. *A limited number of subjects*. The small number, as well as the homogeneity of the functioning level, of students participating in this study prevents strong generalized conclusions about the superiority of concurrent chaining over forward chaining, or the variables which influenced the relative efficiency of the chaining strategies.

2. *The characteristics of the target activities*. The two activities trained in this study had a relatively limited range of stimulus and response variation. It is possible that forward chaining may be more efficient than concurrent chaining for more complex community activities, such as shopping for groceries or using restaurants. In such activities, the increased instructional control provided by forward chaining may allow the teacher to more systematically control stimulus and response variation and thus facilitate acquisition.

Future Research

The cost and complexity of community based training with students with severe handicaps mandates the development of clear, instructional guidelines that can assist teachers in maximizing the efficiency of instruction. This study has raised several questions regarding the variables that influence the overall efficacy of various chaining strategies. Several issues that require additional study include:

1. The variables that influence the relative efficiency of various chaining strategies in establishing performance of community activities.
2. The relative efficiency of concurrent and backward chaining in teaching community activities to students with severe handicaps.
3. The differential effects of massed practice, both within and outside the performance context, on the relative efficiency of concurrent chaining.
4. An examination of the potential interactions between various chaining strategies and task complexity on instructional efficiency.

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A Comparison of Serial and Concurrent Sequencing Strategies in Teaching Generalized Grocery Item Location to Students with Moderate Handicaps

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Running Head: SEQUENCING STRATEGIES

Abstract

This study examined the relative efficacy of serial and concurrent sequencing strategies in teaching generalized grocery item location to six students with moderate handicaps. The efficacy of the strategies was assessed through multiple baseline across subjects design. The results showed that students who received concurrent sequence training demonstrated better generalized performance in three nontrained grocery stores than students who had received serial sequence training, once training criterion was attained. However, students who received concurrent sequence training required more training trials and minutes of instruction to meet training criterion than their peers who had received serial sequence training. The results are discussed in terms of the implications for practitioners in designing community-based training programs and future research in the area of community-based instruction.

Comparison of Serial and Concurrent Sequencing Strategies in Teaching Generalized Grocery Item Location to Students with Moderate Handicaps

In order for individuals with disabilities to fully utilize the resources of the community they must be able to perform employment, leisure, and personal management activities across a range of nontrained conditions and/or settings. As such, generalization of new skills is an important outcome of all community-based instruction (Horner, McDonnell, & Bellamy, 1986; Sailor, Goetz, Anderson, Hunt, & Gee, 1988). One of the more effective strategies currently available to practitioners to develop generalized responding is general case programming (Albin & Horner, 1988; White et al, 1988). This procedure has been shown to enhance generalization with a wide range of community activities including street crossing (Horner, Jones, & Williams, 1985), using the telephone (Horner, Williams, & Stevely, 1987), making purchases from vending machines (Sprague & Horner, 1984), bussing tables (Horner, Eberhard, & Sheehan, 1986), and using fast food restaurants (McDonnell & Ferguson, 1988a).

General case programming is structured to assist practitioners to select a sub-set of tasks and/or sites for training that sample the range of stimulus and response variation that the learner will encounter under natural performance conditions (Horner, Sprague, & Wilcox, 1982). Once the representative sub-set of tasks and/or sites has been identified the next step in developing an instructional program is to determine how the examples will be introduced to the learner during training (Albin, McDonnell, & Wilcox, 1987; Horner, et al, 1982; McDonnell & Ferguson, 1988b).

The most common strategies for introducing instructional examples to individuals with disabilities are serial, cumulative, and concurrent sequencing (Engelmann & Carnine, 1982; Snell & Zirpoli, 1987). In the serial sequencing strategy examples are introduced one at a time to the learner. A single example is trained until the individual can complete the target response reliably, then the second example is introduced and trained. This procedure continues until all examples have been introduced to the learner.

The cumulative sequencing strategy is similar to the serial strategy except that it includes a review component (Engelmann & Carnine, 1982). Training begins with a single example, when the individual is able to perform reliably, the second example is introduced. In the next step of instruction, the individual is required to perform across both examples when they are presented randomly. Subsequent examples are cumulatively added to the training set in this manner until the individual can perform the target response across all examples.

Concurrent sequencing strategies are structured to present all examples to the individual in a random order across instructional sessions. No attempt is made to control the order in which examples are introduced for training. Instruction continues until the individual is able to perform the target response reliably across the entire set of training examples.

Serial and concurrent sequencing strategies are most frequently used by practitioners and researchers (Snell & Zirpoli, 1987). However, there are an extremely limited number of studies that have examined the relative efficacy of these strategies with students with disabilities. Schroeder & Baer (1972) directly compared the effects of serial and concurrent sequencing on the generalized vocal imitation of two children with mental retardation. In the serial sequencing condition, students were trained to criterion on a single response during a training session. During the concurrent sequencing condition, students received training on the entire set of training examples during each session. Results showed that both strategies were effective in training target responses. However, the concurrent sequencing strategy produced better generalization of vocal imitation than the serial sequencing strategy.

Panyan & Hall (1978) conducted a similar study in which serial and concurrent sequencing strategies were compared in teaching letter tracing and vocal imitation to students with severe disabilities. They found that the concurrent sequencing strategy produced better generalization of trained responses than the serial strategy. Finally, Waldo, Guess, & Flanagan (1982) compared the effects of serial and concurrent training on the acquisition and generalization of receptive labeling with three students with severe disabilities. They also found that the concurrent sequencing strategy produced superior generalization effects.

These studies suggest that while both strategies are effective in training responses, concurrent sequencing seems to be more effective than serial sequencing in producing generalization of discrete academic and developmental responses. Unfortunately, there are few studies that have systematically examined the effects of these procedures in teaching complex chains of behavior such as those found in community activities (Snell & Browder, 1986).

This study was designed to compare the relative efficacy of serial and concurrent sequencing strategies in teaching a community-based activity. Six students were taught to select grocery items in three training stores using either a serial or concurrent sequencing strategy. Their generalization of the activity was assessed in three nontrained grocery stores. Implications for developers of community-based instructional programs are discussed.

Method

Participants

Six students enrolled in community-based programs for students with severe disabilities located in regular high schools participated in the study. Students identified in this report as 1, 4, and 5 were male. The participants' age ranged from 16 to 18 years, with an average age of 17 years old. Their mean I.Q. was 44, with a range of 36 to 57 as measured by either the WISC-R or WAIS. All of the students were ambulatory and exhibited no significant behavior problems that would interfere with the acquisition of the experimental task. Students were selected for the study based on the congruence of the experimental task with existing IEP goals and their willingness to participate.

Task and Settings

Students were taught to locate grocery items in three different grocery stores using one of the targeted sequencing strategies. Students were provided 12.5 cm. X 9 cm. close-up photographs of each target item during both the training and generalization probe phases of the study. Table 1 provides a description of the ten target items. The items selected for the study sampled the range of product sections common to most grocery stores in the communities where the students lived (i.e. frozen foods, dairy, produce, etc.).

Insert Table 1 about here

Grocery stores designated as training or generalization probe stores were selected following a general case analysis of the grocery stores in the subjects' communities (Horner et al, 1982). In the analysis, the stimulus variations relating to the general location of each target item within the store, along with the relative position of the item on the shelf, were the focus of the general case analysis. Three stores were selected for training which represented the range of stimulus variation found across all stores included in the analysis. Three additional stores which reflected the same range of variation were designated as generalization probe stores. Table 2 provides a description of the relative location of the target items within each store.

Insert Table 2 about here

Trainers

The first author and two undergraduate students in special education teacher preparation programs served as trainers in the study. Each had previous experience working with individuals with disabilities. The undergraduate trainers were provided with approximately two hours of instruction on training and data keeping procedures prior to the initiation of the study. The trainers' fidelity in using the procedures was assessed on a weekly basis throughout the course of the study. Fidelity assessments consisted of direct observations of the trainer during training and generalization probe sessions by the first author. Feedback regarding the use of the procedures was provided to the trainer at the conclusion of each observed session.

Dependent Measures

The dependent measures in this study included (1) the percent of items correctly located by students across the three generalization probe stores, (2) the topography and frequency of errors made by students during generalization probes, and (3) the number of item presentations during training and minutes of instruction to criterion.

The percent of items correctly located by students in generalization probe stores. This measure yielded information on the students' generalized performance of item location in nontrained stores. Students were asked to locate each of the ten target items in each of the three probe stores. Probe data were summarized as the percent of items located independently across all three probe stores. A probe session for a student was generally completed over two consecutive days.

A generalization probe trial was initiated by the trainer leading the student to the perimeter aisle at the front of the store. The student was presented with the first item photograph and the prompt, "Please find the Blue Bonnet". No other assistance or feedback was given during the trial. Item photographs were presented in the order they appear in Table 1 during all probe sessions. Each item search was initiated at the perimeter aisle nearest the preceding item in the set (with the exception of the first item which was initiated from the perimeter aisle nearest the entrance).

The student's response was considered correct if s/he entered the aisle that contained the target item within 180 s following the trainer's prompt, and then touched the item on the shelf within 60 s of entering the correct aisle. If either of these two conditions were violated, the student's performance was scored as incorrect for the particular item. Time limits were established through social validation trials conducted by the first author in locating items within the training and generalization probe stores. Time limits represented the average time needed to locate items plus a 25% margin of error.

<u>The topography and frequency of specific errors made by students during generalization probe sessions</u>. This measure focused on the specific types of errors made by students in locating items during probe sessions. Two general categories of errors were tracked including aisle and item errors (c.f., McDonnell & Horner, 1986). Aisle errors consisted of the student (1) failing to enter the correct aisle within the 180 s time limit, (2) entering an incorrect aisle (as measured by the subject entering the aisle three paces or more), or (3) passing the correct aisle three times as the student moved along the

perimeter aisle. Item errors consisted of the student (1) failing to locate the target item within 60 s of entering the correct aisle, (2) selecting the right item (e.g., margarine) but the wrong brand (e.g., Imperial), or (3) selecting the right item and brand but the wrong size. When an aisle or item error occurred, the trainer ended the student's search by thanking the student for working, retrieving the item photograph, and returning to the perimeter aisle closest to the target item just completed. The student was then given the photograph of the next target item along with the initial prompt.

Following the presentation of all items within a probe store, the student was given the opportunity to locate the items on those aisles where an aisle error initially occurred. This was accomplished by leading the student to one end of the correct aisle, presenting the item photograph, and requesting that they locate the item (e.g., "Bob, find the crackers on this aisle."). If the student did not select the correct item, the specific type of item error was recorded.

The number of item presentations during training and minutes of instruction to criterion. These measures assessed the relative efficiency of the two sequencing strategies in establishing reliable item location. The first measure was a simple frequency count of the number of item presentations required for students to meet training criterion. Training criterion was defined as the correctly and independently locating

8 of 10 target items in all three of the training stores, across two consecutive training trials.

The second measure was the total number of minutes of instruction required for students to meet the training criterion. This was calculated as the number training sessions required by the student to meet training criterion, multiplied by 20. Where 20 represented the maximum number of minutes allowed per training session.

Design

This study employed a two-level multiple baseline across subject design (Barlow & Hersen, 1984). Students were randomly assigned to treatment conditions and baselines. The specific phases of the study were baseline, concurrent sequence training, and serial sequence training.

Baseline. Prior to the introduction of training under any sequence format, generalization probe sessions were conducted for each subject according to the procedures described above. An additional baseline condition was reintroduced for students in the serial sequence condition following the completion of training at the third training store.

Concurrent sequence training. In this condition, students received instruction on item location across all three training stores. Training stores were presented randomly to students across instructional sessions, with one to two training sessions being conducted per school day. Students received instruction in each training store at least once during each week of training. During a training trial the student was provided with the target item photographs and prompted to attend to the relevant environmental cues within each store that would facilitate item location (e.g., aisles that contained items of the same category as the target item, freezer cases, refrigeration sections, non-food sections, etc.). Initially the student was provided a combination of direct verbal and gestural cues to locate target items. As the student demonstrated reliable performance as a result of these prompts, indirect verbal cues were initiated while gestural cues were discontinued. Finally, indirect verbal cues were eliminated and the student was allowed to locate the items without assistance. Correct responses were praised by the trainer. Errors were corrected by providing the level of assistance necessary for the student to be able to successfully complete the item search.

During each 20 minute training session, photographs of the target items were presented to the student in random order. The number of trials (i.e., opportunity to search for all ten of the target items) completed during a session varied depending on the amount of assistance required by the student to locate the items. Training continued in this condition until the student located 8 of the 10 items across all three training stores on two consecutive training trials.

Serial sequence training. In this condition, each student received training in a single store until they could correctly and independently locate 8 out of 10 of the target items during two consecutive trials. Training was then initiated in the second store and continued until the student met the same criterion. Finally, the student was trained to locate the items in the third training store. The order in which training stores were introduced to students in the serial sequencing condition were counterbalanced to avoid potential ordering effects. The procedures used to train item location were identical to those used in the concurrent sequence training condition.

During the each 20 minute training session, photographs of the target items were presented to the student in random order. The number of item trials (i.e., opportunity to search for all ten of the target items) completed during a session varied depending on the amount of assistance required by the student to locate the items.

Schedule of Generalization Probe Sessions. For purposes of equating exposure to training stores under each of the sequencing conditions, each student in the concurrent sequencing condition was yoked to a student in the serial sequencing condition (students 1 and 4, students 2 and 5, students 3 and 6). For example, training under their respective conditions was initiated for students 1 and 4. When student 4 (serial sequencing condition) correctly and independently located 8 out of 10 of the target items in his first training store across two consecutive trials, all students received a generalization probe. Training then was initiated for students 2 and 5. When both students in the serial condition (students 4 and 5) met the store criterion of 8 out of 10 items successfully located across two consecutive trials, generalization probes were conducted across all students. The final pair was then introduced to their respective training formats. When all three serial sequencing students met store criterion, generalization probes were conducted across all students.

Interobserver Agreement During Generalization Probes

Interobserver agreement data were taken on 40% of all generalization probe trials. On these occasions, the trainer and the observer (first author) independently tracked student responses. An agreement was defined if both the trainer and observer recorded the student performance on each item as either correct or incorrect. The percent of interobserver agreement was calculated by dividing the number of agreements by the total number of agreements plus disagreements, multiplied by 100. Interobserver agreement ranged between 98% and 100%, with an average agreement of 99%.

Results

Percent of Items Located Correctly During Generalization Probes

The percent of items correctly located by students during generalization probe sessions is presented in Figure 1. During the initial baseline phase, students correctly located between 0% and 33% of the target items.

Serial sequence training led to improvement in the students' ability to locate target items in nontrained stores. Student 4 was able to locate 57% of the items after meeting criterion in all three training stores. Student 5 located 83% of the items correctly, and Student 6 was able to locate 67% of the items after attaining training criterion. On average, students who received serial sequence training were able to located 69% of the items during generalization probe sessions following training in all three training stores.

Concurrent sequence training also resulted in substantial performance improvements in the nontrained probe stores. After meeting criterion in all three training stores, students 1, 2, and 3 were able to locate 80%, 97%, and 80% of the items, respectively. On average, these students were able to located 86% of the target items in generalization probe stores once they met the training criterion.

Following the introduction of concurrent sequence training for students in the serial condition, students 4, 5, and 6 improved their generalized item location performance above the level achieved following serial sequence training to 90%, 97%, and 80%, respectively, with a group mean of 89%.

Insert Figure 1 about here

Student Errors During Generalization Probe Sessions

Table 3 presents the average frequency of student aisle errors across probe sessions by experimental condition. Close examination of Table 3 shows that the most frequent aisle error across both the serial and concurrent sequence conditions was "Enter the wrong aisle". Students 4 through 6 averaged 8.1 aisle errors during generalization probe session during serial sequence training. In contrast, students in the concurrent sequencing condition averaged 4.6 aisle errors during probe sessions in concurrent sequence training. The average number of aisle errors made by students in the serial condition decreased to 2.3 after they received concurrent sequence training.

Insert Table 3 about here

Table 4 presents the mean frequency of specific item errors during probe sessions. Although there was no consistent pattern of item errors among students in the serial or concurrent sequence conditions, there were differences between the groups in the average number of errors. Students in the serial sequencing condition averaged 9.6 item errors per probe session. Students in the concurrent sequencing condition averaged 6.3 item errors during probe sessions. Finally, the average number of item errors for students 4, 5, and 6 decreased to 1.8 after receiving concurrent sequence training.

Insert Table 4 about here

Number of Item Presentations and Minutes to Criterion.

Performance criterion for trair g was established as correct and independent location of at least 8 of 10 target items in each of the three training stores across two consecutive training trials. Total minutes of instruction required to reach training criterion was calculated by multiplying the number of training sessions by 20, where 20 represented the maximum number of minutes allowed per training session. Table 5 presents the number of item presentations and minutes of instruction required for students to meet training criterion across the two experimental conditions. Students 4 through 6, who had received serial sequence training, required an average of 121 item presentations and 173 minutes (2.9 hours) of instruction to meet training criterion. Students who had received concurrent sequence training required an average of 183 item presentations and 340 minutes (5.7 hours) of instruction. Stuc ts in the serial condition required an average of 55 item presentations and 100 minutes (1.6 hours) of instruction to reach criterion once concurrent sequence training was initiated.

Analysis shows that both groups received approximately the same number of training trials between generalization probes. Students in the concurrent sequencing condition received an average of 4.0 training trials between probe sessions. Students in the serial sequencing condition received an average of 4.3 training trials between generalization probes.

Insert Table 5 about here

Discussion

This study examined the relative efficacy of serial and concurrent sequencing strategies in teaching generalized grocery item location to six high school students with moderate disabilities. The results indicate that while both strategies led to improved performance, students who received concurrent sequence training were able to locate on average 17% more of the items in nontrained stores after meeting the training criterion than students who had received serial sequence training. Furthermore, the average performance of students 4, 5, and 6 in generalization probe stores improved by 20% after meeting training criterion in the concurrent sequence training condition. Although the concurrent sequencing strategy resulted in superior generalization in locating grocery items in nontrained stores, students receiving serial sequence training required fewer item presentations to meet the training criterion.

The differences between the level of generalization achieved by students in the serial and concurrent sequencing conditions could be accounted for by the additional item presentations required by students in the concurrent sequencing strategy to meet the training criterion. In other words, the difference in performance in nontrained stores might simply stem from increased exposure to the task. Consequently, we might draw a different conclusion concerning the efficacy of the serial and concurrent sequencing strategies if students had received a comparable number of item presentations.

Such an analysis is possible within the present study if we conduct a probe by probe comparison of the performance of students in the concurrent sequencing condition, with the performance of students in the serial sequencing condition after they met criterion in each training store. For example during probe session 2, student 1 located 10% of the items correctly after receiving instruction concurrently in the three training stores. Student 4, who had received training and met criterion in one store, located 15% of the items. During probe session , student 1 located 50% of the items. In contrast, student 4, who had received training and met criterion in two of the three training stores, located 35% of the items. In probe session 4, student 1 located 60% of the items. During the same probe, student 4 located 55% of the items after he had demonstrated the ability to located at least 8 out of the 10 target items in all three training stores. Between baseline and probe session 4, student 1 received a total of 88 item presentations, student 4 received 110 item presentations. Student 1 made aisle or item errors on 41% of these training trials. In contrast, student 4 made errors on 54% of his training trials. Similar patterns of performance in nontrained generalization stores and rates of errors during training sessions were found for students 2 and 5, and students 3 and 6.

These data do not support the contention, that even with a comparable number of training trials, that the serial sequencing strategy would have been more effective or efficient for this group of students than one in which training sites were presented randomly across instructional sessions. In fact, there appeared to be little difference in effectiveness or efficiency between the two strategies when number of item presentations are controlled. It is important to note, however, that students in the concurrent sequencing condition had not yet met the designated training criterion. In all cases, once they had met criterion their generalized performance was superior to students who had received serial sequence training. For example, student 1 met the training criterion in the concurrent sequencing condition immediately prior to probe session 6. In the probe session, he located 80% of the items across the three generalization probe stores. In contrast, student 4 after meeting criterion in the serial sequencing condition, located 55% of the items in the generalization probe stores. Student 2 located 90% of the items in generalization probe stores after meeting the training criterion in the current sequencing strategy and student 5 located 80% of the items after meeting criterion under the serial sequencing strategy. Finally, student 3 located 80% of the items after meeting criterion in the concurrent sequencing strategy and student 6 located 65% of the items after meeting the training criterion in the serial sequencing strategy. In addition, the performance of students who initially received serial sequencing training improved after they had met criterion in the concurrent sequencing condition.

One possible explanation for the discrepancy in the effectiveness of these two strategies may lie in the differences between the range of stimulus and response variation that was presented to students during each week of training. In the concurrent sequencing strategy, the entire range of stimulus and response variation was presented to the student after only a few sessions. As a result, the student was required to learn responses that would apply across all possible variations found in nontrained generalization sites. In contrast, students who received serial sequence training were only exposed to the variation presented by one store. Thus, they may have learned responses that were not applicable in settings whose stimulus characteristics were different than the store in which they had most recently received training. The relationship between generalization errors and the control of a student's responses by stimulus conditions unique to a single task and/or setting have been well documented by other researchers (Albin & Horner, 1988; Horner, McDonnell, & Bellamy, 1986). This is evident in the performance of the serial sequencing students following training under concurrent sequencing conditions. On average these students required nearly 45% more item presentations and 58% more minutes of instructions under concurrent sequencing conditions as they received under serial sequencing in order to meet generalized performance criterion. Given the previous exposure of these students to the training stores, it was expected that they would meet the generalized performance criterion rapidly under concurrent sequencing conditions. The fact that this did not occur suggests these students may have been "unlearning" nonfunctional responses during this phase that had been established in serial training.

Three weaknesses of this study should be noted. First, the small number of subjects restricts the external validity of the study and thus limits the generalizations that may be made beyond the study sample. Second, since amount of stimulus and response variation present in training stores varied, the degree to which generalization was enhanced or inhibited by the order in which stores were introduced to students for instruction is unknown. Finally, there is the possibility that the differential effects found between the serial and concurrent strategies for students 4 through 6 may have resulted simply from multiple treatment effects. However, the insertion of the second baseline between the serial and concurre t conditions helped control for this possibility.

For this group of students, it appears that a concurrent sequencing strategy was equal, or superior to, a serial sequencing strategy. Although the serial sequencing strategy may allow students to meet training criteria more rapidly, this may not necessarily translate into superior performance under natural conditions. Although concurrent sequencing may enhance the development of generalized performance in students with moderate disabilities, it is unclear whether the concurrent sequencing strategy is the always the most effective and efficient means for developing a generalized response. For example, the concurrent sequencing strategy may not be practical in situations in which there are a large number of instructional examples. Engelmann & Carnine (1982) have suggested that in such cases a cumulative sequencing strategy may be the most viable alternative. Unfortunately, the effectiveness the cumulative sequencing strategy in teaching large chains of behavior has not been examined. In addition, the structure of the cumulative sequencing strategy may require practitioners to systematically order examples within the sequence to prevent the development of specific generalization errors. Further research is necessary to examine the potential benefits of the cumulative sequencing strategy in establishing generalized performance of community activities by learners with moderate and severe disabilities.

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Figure Caption

Figure 1. Percent of items correctly located by students during generalization probe sessions.

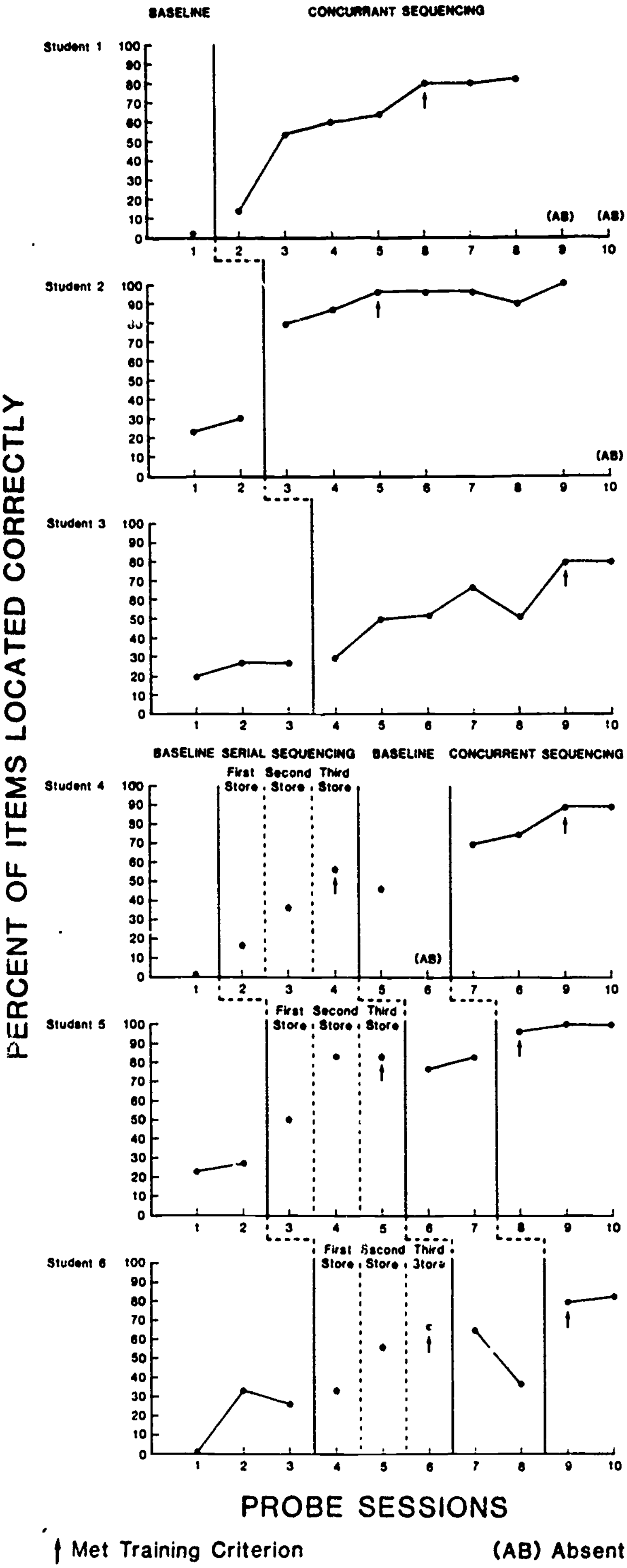
BASELINE
CONCURRANT SEQUENCING
Student 1
Student 2
Student 3
BASELINE SERIAL SEQUENCING BASELINE CONCURRENT SEQUENCING
First Store
Second Store
Third Store
Student 4
Student 5
Student 6
(AB)
PERCENT OF ITEMS LOCATED CORRECTLY
PROBE SESSIONS
Met Training Criterion
(AB) Absent

Table 1

Description of Target Items

Item	Size	Category
1. Blue Bonnet Margarine	16 oz.	Dairy
2. Bananas	Bunch	Produce
3. Charmin Bathroom Tissue	6-roll (any color)	Paper Goods
4. Green Giant Whole Kernel Corn	17 oz.	Canned Goods
5. Tide Laundry Detergent	4 lb. 8 oz.	Cleaning supplies
6. Colgate Toothpaste	6.4 oz.	Personal Care
7. Whole Sun Orange Juice	12 Fl. oz.	Frozen Foods
8. Cheerios Breakfast Cereal	20 oz.	Cereal
9. Sprite	2 liter	Soft Drinks
10. Zesta Saltine Crackers	16 oz.	Cookies/ Crackers

Table 2

Comparison of Training and Generalization Probe Stores

	Training Stores			Generalization Probe Stores		
Feature/Item	Store 1	Store 2	Store 3	Store 1	Store 2	Store 3
Number of Aisles	17 Single	14 Traversed By Center Aisle	13 Traversed By Center Aisle	17 Single	17 Half Traversed By Center Aisle Half Single	10 Single
Blue Bonnet Location	Right Wall Rear Low	Right Wall Rear Low	Back Wall Center of Store Low	Right Half Rear Low	Back Wall Right Rear High	Back Wall Center of Store Low
Bananas Location	Right Half Front On Table	Right Half Front On Table	Left Half Middle On Table	Left Half Middle On Table	Right Half Front On Table	Left Half Rear On Table
Charmin Location	Left Half Rear Medium	Left Half Rear High	Right Half Rear High	Left Half Middle Medium	Left Half Rear High	Right Half Front Medium
Corn Location	Right Half Middle Low	Right Half Rear Medium	Left Half Middle Medium	Left Half Front Medium	Left Half Front Low	Left Half Rear Low
Tide Location	Left Half Middle Low	Left Half Middle Low	Right Half Middle Low	Left Half Front Low	Right Half Front Low	Right Half Middle Low
Colgate Location	Left Half Rear Medium	Left Half Front High	Right Half Rear Medium	Back Wall Middle Medium	Left Half Middle Medium	Right Half Middle Medium

Table 2 cont.

Feature/Item	Training Stores: Store 1	Training Stores: Store 2	Training Stores: Store 3	Generalization Probe Stores: Store 1	Generalization Probe Stores: Store 2	Generalization Probe Stores: Store 3
Orange Juice Location	Center Aisle Middle Open Freezer	Center Aisle Front Open Freezer	Center Aisle Front Open Freezer	Right Half Rear Closed Freezer	Center Aisle Front Open Freezer	Right Half Rear Closed Freezer
Cheerios Location	Right Half Rear Medium	Right Half Front Low	Left Half Rear Low	Right Half Front Low	Right Half Middle Medium	Left Half Front Low
Sprite Location	Right Half Middle High	Right Half Front High	Left Half Middle High	Right Half Middle High	Right Half Middle High	Right Half Middle High
Zestas Location	Right Half Middle Low	Right Half Middle Low	Left Half Middle Low	Right Half Front Low	Center Aisle Middle Low	Right Half Middle Low

Table 3

Average Number of Aisle Errors During Generalization Probes

	SERIAL			CONCURRENT		
Student/Condition	Enters Wrong Aisle	Passes Correct Aisle	Too Much Time	Enters Wrong Aisle	Passes Correct Aisle	Too Much Time
Concurrent						
1	—	—	—	5.8	1.2	0
2	—	—	—	2.3	0	0
3	—	—	—	3.9	.6	0
Serial						
4	9.7	3.7	1.7	2.0	.8	0
5	1.3	0	0	0	0	0
6	5.3	1.3	0	3.7	.3	0

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Table 4

Average Number of Item Errors During Generalization Probe Sessions

Student/Condition	SERIAL No Selection	SERIAL Wrong Item	SERIAL Right Item Wrong Brand	SERIAL Wrong Size	CONCURRENT No Selection	CONCURRENT Wrong Item	CONCURRENT Right Item Wrong Brand	CONCURRENT Wrong Size
Concurrent								
1	—	—	—	—	5.8	.2	.3	1.2
2	—	—	—	—	.7	0	0	.7
3	—	—	—	—	.6	.3	.3	8.4
Serial								
4	11.7	0	0	.7	1.0	0	0	.8
5	1.7	1.0	.7	4.0	.5	0	0	0
6	.7	.3	3.0	5.0	1.7	.3	0	1.0

Table 5

Item Presentations and Minutes of Instruction to Training Criterion

	Serial		Concurrent	
Student	Trials	Minutes	Trials	Minutes
1	-	-	108	220
2	-	-	290	520
3	-	-	152	200
4	125	180	70	120
5	169	200	32	60
6	70	140	63	120

Attachment D

Procedural Manuals

DESIGNING COMMUNITY-BASED
INSTRUCTIONAL PROGRAMS

John McDonnell
Brad Ferguson

IMPROVING COMMUNITY-BASED INSTRUCTION PROJECT
SCHOOL AND COMMUNITY INTEGRATION PROGRAM
DEPARTMENT OF SPECIAL EDUCATION
SALT LAKE CITY, UTAH 84112

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THE IMPROVING COMMUNITY-BASED INSTRUCTION PROJECT

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INTRODUCTION

This manual is designed to assist teachers of high school students with severe handicaps to design effective and efficient instructional programs to teach community, vocational, personal management, and leisure activities. It provides a step by step description of the decisions that teachers face in developing community-based programs and provides a procedural framework for developing these programs. The procedures included in the manual are a synthesis of previous research on community based instruction and research conducted by the ICI project. However, in some cases limited research forced us to make recommendations based on our own experience in conducting community-based instruction with students with severe handicaps.

The manual was designed for teachers or other practitioners who are knowledgeable about basic instructional strategies for individuals with severe handicaps. These "basic" strategies include developing appropriate instructional objectives, conducting task analyses of activities, strategies for building chains of behavior, response prompting and fading procedures, and data collection. It is recommended that you become familiar with these strategies *before* you use the manual. A list of introductory readings to get you started is presented in Attachment 1.

The manual is organized into 7 procedural components. These are (1) Conducting an Analysis of Performance Demands, (2) Selecting Training Sites and Tasks for Instruction, (3) Sequencing Training Sites and Tasks for Instruction, (4) Conducting a Baseline Probe, (5) Selecting a Chaining Strategy, (6) Selecting and Assistance Strategy and Correction Procedure, and (7) Organizing a Data Collection System and Program File. These components should be completed in order. Figure 1 presents the overall sequence for implementing these components.

Each component includes three elements including DECISIONS, ACTIVITIES, and STEPS. The DECISIONS presented in each component are designed to assist you to select the strategies that will be the most effective for the student with whom you are working. The DECISIONS will direct you to specific ACTIVITIES that you should complete in developing the instructional program. Each ACTIVITY is broken down into STEPS that will help you design the instructional procedures for the student and to complete the programming forms included in the manual. Illustrations of how to design instructional procedures and how to complete program forms are presented with each ACTIVITY and STEP.

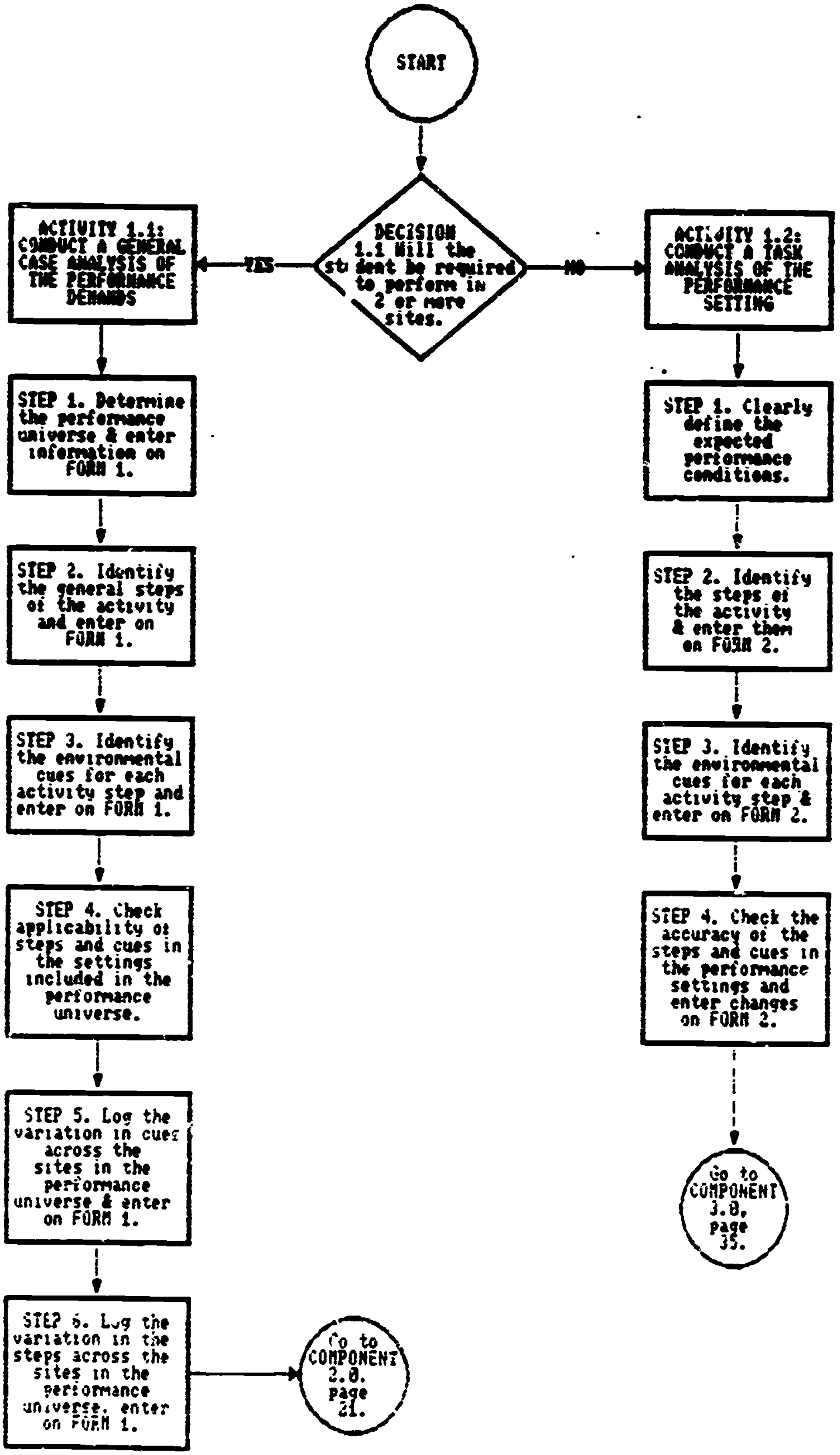
Directions about what to do next in completing the program will be presented at the end of each ACTIVITY.

COMPONENT 1.0
CONDUCT ANALYSIS OF PERFORMANCE DEMANDS

Component 1.0 outlines the decisions and activities necessary to conduct an analysis of the demands of the activity. The analysis should focus on identifying the specific responses required to successfully complete the activity across all sites and tasks. This information will provide the basis for designing the instructional program.

The sequence of decisions and activities required to carry out an analysis of the activity are presented in Figure 2.

Figure 2
COMPONENT 1.0 CONDUCT ANALYSIS OF PERFORMANCE DEMANDS



DECISION 1.1

DECISION	ACTION
Decision 1.1: Will the student be required to perform the activity in 2 or more settings?	Yes. Go To Activity 1.1, page 4. No. Go To Activity 1.2, page 14.

Explanation: The number of sites in which students will be expected to perform activities will vary. Some students will be expected to perform in a large number of sites, others may only be expected to perform activities in one setting. When the student is expected to perform in more than 2 sites the teacher should conduct a General Case Analysis. When the student will perform in one or two settings the teacher should conduct a task analysis of the activity.

ACTIVITY 1.1: Conduct a General Case Analysis of the Performance Demands

Purpose: The purpose of a General Case Analysis is to develop a clear description of the activity to be taught and the settings in which the activity will be performed. This information will be used to select sites for training that are representative of all the settings that the student must use to successfully complete the activity. To accomplish this the teacher must (a) develop a clear description of the general steps that the student must go through to complete an activity across all performance settings, (b) identify the environmental cues that should tell the student when and how to complete each step of the activity, and (c) "log" the variations in the activity steps and environmental cues that naturally occur across the different settings.

Materials: FORM 1

STEP	EXPLANATION
1. Determine the Performance Universe and enter information on FORM 1.	In this step the teacher should clearly identify the conditions under which the student will complete the activity. The teacher should identify: 1. Where the student will complete the activity, 2. When the student will complete the activity, 3. What the student will be expected to do in each setting, and 4. How the student will be expected to meet the performance demands of the activity. In most cases this information is generated as part of the student's Individualized Educational Program (IEP) and may already be specified as part of their annual goals or short-term objectives. The illustration of FORM 1 provides a specific example for the activity of using fast food restaurants. In this example, Bob will be expected to use Burger King, McDonald's, Dairy Queen, Hardee's, Wendy's, and Crown Burger. He will generally be expected to complete the activity between 1:00 and 4:00 p.m. Ultimately, Bob will be able to purchase drink and snack items. Because Bob has limited communication and academic skills he will use a communication notebook to order, and use a $5 bill to pay.

ILLUSTRATION OF
FORM 1
ACTIVITY ANALYSIS FORM FOR COMMUNITY ACTIVITIES
(Adapted from Horner, Sprague, & Wilcox, 1982)

Student(s) *Bob*　　　　Date *February 8, 1988*

Activity *Using fast food restaurants*

Performance Universe:

Where: *Burger King, McDonald's, Dairy Queen, Hardee's, Wendy's, Crown Burgers*

When: *1:00 pm to 4:00 pm*

What: *Purchase individual drink and snack items.*

How: *Order cards to order purchases and $5 dollar bill*

Generic Environmental Cues	Variation in Cues Across Settings	Generic Activity Steps	Variation in Activity Steps

STEP	EXPLANATION
2. Identify the general steps of the activity and enter them on FORM 1.	Identify the "steps" that the student will need to go through in order complete the activity in any setting. The steps should be clear statements of the actions that the *student* must take to successfully complete the activity. These steps should be stated in a way that are applicable to all of the settings that you identified in the performance universe. A good way to generate these steps is to imagine yourself having to provide directions to another person to complete the activity in several different settings. In providing directions to the person, you should make no more than 15 separate statements to him/her; each statement must be limited to a maximum of 6 words. If you are familiar with the activity you should complete this step *before* you go out to observe in the settings that you identified in the performance universe. If you are unfamiliar with the activity you should complete this step in the performance settings. In the example of Form 1, the teacher identified 10 general activity steps that Bob would have to complete in order to purchase food items in fast food restaurants. These included entering the restaurant, approaching the counter, placing his order, paying for his order, waiting and obtaining his order, locating an empty table, eating his order, cleaning the table and emptying trash, and exiting the restaurant.

ILLUSTRATION OF
FORM 1
ACTIVITY ANALYSIS FORM FOR COMMUNITY ACTIVITIES
(Adapted from Horner, Sprague, & W[illegible], 1982)

Student(s) Bob Date February 8, 1988

Activity Using fast food restaurants

Performance Universe:

Where: Burger King, McDonald's, Dairy Queen, Hardee's, Wendy's, Crown Burgers

When: 1:00 pm to 4:00 pm

What: Purchase individual drink and snack items.

How: Order cards to order purchases and $5 dollar bill

Generic Environmental Cues	Variation in Cues Across Settings	Generic Activity Steps	Variation in Activity Steps
		1. Enter the restaurant.	
		2. Approach the counter.	
		3. Place order.	
		4. Pay for order.	
		5. Move out of line and wait.	
		6. Obtain order.	
		7. Locate empty table.	
		8. Eat order.	
		9. Clean table & dispose of trash & tray	
		10. Exit restaurant.	

STEP	EXPLANATION
3. Identify the environmental cues for each activity step and enter on FORM 1.	Identify the "environmental cues" that should tell the student when and how to complete each step of the activity. These cues should be applicable to all of the settings you listed in the instructional universe. Environmental cues may come in many different forms including: 1. objects in the environment (e.g., a can of frozen orange juice), 2. events or actions that occur consistently in the settings (e.g., a street light changing color), 3. verbal or gestural directions provided by individuals who are consistently present in the setting (e.g., verbal request for payment by cashiers), 4. words, numerals, or symbols consistently present in the settings (e.g., the price on a cash register), 5. temporal or time cues (e.g., the time that bus departs), or 6. successful completion of a step of the activity (e.g., exiting the store when the cashier gives you your change) In many community activities, more than one environmental cue may control the student's completion of an activity step. You should take care to identify all of the environmental cues that should control the student's completion of each activity step. If you are familiar with the activity, you may complete this step before going to the sites included in the performance universe. If you are not familiar with the activity, complete this step in the performance sites. An example of the generic environmental cues for using fast food restaurants is presented in the illustration.

ILLUSTRATION OF
FORM 1
ACTIVITY ANALYSIS FORM FOR COMMUNITY ACTIVITIES
(Adapted from Horner, Sprague, & Wilcox, 1982)

Student(s) Bob

Date February 8, 1988

Activity Using fast food restaurants

Performance Universe:

Where: Burger King, McDonald's, Dairy Queen, Hardee's, Wendy's, Crown Burgers

When: 1:00 Pm to 4:00 pm

What: Purchase individual drink and snack items.

How: Order cards to order purchases and $5 dollar bill

Generic Environmental Cues	Variation in Cues Across Settings	Generic Activity Steps	Variation in Activity Steps
1. Door.		1. Enter the restaurant.	
2.a. Counter. *b. Cash Register.* *c. "Order" sign.*		2. Approach the counter.	
3. Cashier's request.		3. Place order.	
4.a. Price on register. *b. Verbal request by cashier.*		4. Pay for order.	
5.a. Cashier gives change. *b. Line.* *c. "Pick-up" sign.*		5. Move out of line and wait.	
6.a. Cashier's request. *b. Tray.*		6. Obtain order.	
7.a. Table. *b. Customers.*		7. Locate empty table.	
8. a. Seated at table. *b. Drink and food containers.*		8. Eat order.	
9.a. Drink & food consumed. *b. Drink & food containers.* *c. Trash cans.*		9. Clean table and dispose of trash and tray.	
10.a. Doors. *b. Exit signs.*		10. Exit restaurant.	

STEP	EXPLANATION
4. Check the applicability of the general activity steps and environmental cues in the settings included in the performance universe.	In this step, "check" the applicability of the activity steps and environmental cues you listed on FORM 1. The easiest way to do this is simply observe several people complete the activity in each site. This step should be completed in each setting that you included in the performance universe.
5. Log the variation in environmental cues across the settings included in the performance universe and enter on FORM 1.	In most community activities there will be variations across settings in environmental cues. In this step you are simply trying to "log" these variations for each generic environmental cue that you have listed on FORM 1. This step should be completed in all of the settings in which the student will be expected to perform. A good way of identifying the range of variation in generic environmental cues is to observe at least three individuals complete the activity. If you have not personally done the activity, it is *strongly* recommended that you complete it in each of the settings included in the performance universe. This will assist you to accurately identify the range of variation in the generic environmental cues. In the illustration on FORM 1, Bob's teacher identified three types of doors for the first activity step of "Entering the restaurant". These included single doors that were either pushed or pulled open, double doors that were either pushed or pulled open, and double doors that opened automatically. For the step of "Approaching the counter", Bob's teacher found that the counters in the restaurants were located immediately on the right upon entering the restaurant, immediately on the left upon the restaurant or directly in front of the doors. There were two different types of cash registers across all of the restaurants included in the performance universe. These included a tan register which sat on top of the counter and a stainless steel register that was inset in the counter. Finally, two of the restaurants had signs that hung directly above the counter to indicate where orders should be placed.

ILLUSTRATION OF
FORM 1
ACTIVITY ANALYSIS FORM FOR COMMUNITY ACTIVITIES
(Adapted from Horner, Sprague, & Wilcox, 1982)

Student(s) Bob Date February 8, 1988

Activity Using fast food restaurants

Performance Universe:

Where: Burger King, McDonald's, Dairy Queen, Hardee's, Wendy's, Crown Burgers

When: 1:00 pm to 4:00 pm

What: Purchase individual drink and snack items.

How: Order cards to order purchases and $5 dollar bill

Generic Environmental Cues	Variation in Cues Across Settings	Generic Activity Steps	Variation in Activity Steps
1.a. Door.	*Single door - push/pull.* *Double door - push/pull.* *Double door - automatic.*	1. Enter the restaurant.	
2.a. Counter.	*On the right.* *On the left.* *In front of door.*	2. Approach the counter.	
b. Cash Register.	*Tan - on top of counter.* *Stainless steel - inset in the counter.*		
c. "Order" sign.	*Above counter.*		
3.a. Cashier's request.	*Can I help you?* *What will it be?* *Have you been helped?* *Hello, welcome to ?* *Yes?*	3. Place order.	
4.a. Price on register.	*Drinks - .55 to 1.00.* *Food items - .35 to 2.89.* *Total - .35 to 4.78.*	4. Pay for order.	
b. Verbal request by cashier.	*That will be _ dollars and _ cents.* *Says numbers.*		
5.a. Cashier gives change.	*Variable.*	5. Move out of line and wait.	
b. Line.	*None to several.*		
c. "Pick-up" sign.	*Above counter.*		
6.a. Cashier's request.	*Here's your order.* *Here you go.* *State ordered items.*	6. Obtain order.	

STEP	EXPLANATION
6. Log the variation in the general activity steps across settings included in the performance universe and enter on FORM 1.	List the changes in how the student completes each activity step across the settings included in the performance universe. The easiest way to log these variations is to watch at least three people complete the activity in each setting. When listing the variations in the activity step, remember to only record the actions that are *observable*. If you are unfamiliar with the activity it is recommended that you complete the activity yourself in each setting and record what you did on each activity step. When a student is using an alternative performance system, such as a communication notebook, you should list how the individual will use the strategy to complete the activity step. In the illustration, Bob's teacher identified three possible variations in the activity step of "Entering the restaurant" across all of the settings included in the performance universe. These included pushing the door open, pulling the door open, and walking through the door. For the activity step of "Approaching the counter" the variations included turning right and walking to the counter, turning left and walking to the counter, and walking to the counter.
Go to page 21. Component 2.0: Select training sites and tasks.	

ILLUSTRATION OF
FORM 1
ACTIVITY ANALYSIS FORM FOR COMMUNITY ACTIVITIES
(Adapted from Horner, Sprague, & Wilcox, 1982)

Student(s) Bob Date February 8, 1988

Activity Using fast food restaurants

Performance Universe:

Where: Burger King, McDonald's, Dairy Queen, Hardee's, Wendy's, Crown Burgers

When: 1:00 Pm to 4:00 pm

What: Purchase individual drink and snack items.

How: Order cards to order purchases and $5 dollar bill

Generic Environmental Cues	Variation in Cues Across Settings	Generic Activity Steps	Variation in Activity Steps
1. Door.	Single door - push/pull. Double door - push/pull. Double door - automatic.	1. Enter the restaurant.	***Push the door. Pull the door. Walk through door.***
2.a. Counter.	On the right. On the left. In front of door.	2. Approach the counter.	***Turn right and walk toward the counter. Turn left and walk toward the counter.***
b. Cash Register.	Tan - on top of counter. Stainless steel inset in the counter.	2. cont	***Walk toward the counter.***
c. "Order" sign.	Above counter.		
3.a. Cashier's request.	Can I help you? What will it be? Have you been helped? Hello, welcome to Yes?	3. Place order.	***Present order card of drink item. Present order card of snack item. Present order card of lunch.***
4.a. Price on register.	Drinks - .55 to 1.00. Food items - .35 to 2.89. Total - .35 to 4.78.	4. Pay for order.	***Give cashier $5.00 bill.***
b. Verbal request by cashier.	That will be __ dollars and __ cents. Says numbers.		
5.a. Cashier gives change.	Variable.	5. Move out of line and wait.	***Move to right and stand by the counter.***
b. Line.	None to several.		

Activity 1.2: Conduct a Task Analysis of the Performance Setting

Purpose: The purpose of the task analysis is to (a) identify the steps that the student will perform in order to successfully complete the target activity and (b) identify the environmental cues that will tell the student when and how to complete each step in the task analysis. It is important to remember that a task analysis is a description of *what* you are going to teach not a description of *how* you will teach the activity.

Materials: FORM 2.

STEP	EXPLANATION
1. Clearly define the expected performance conditions.	In this step you should clearly define the conditions under which the student will be expected to complete the activity. You should specify 1. *when* the student will complete the activity, 2. *what* the student will be expected to do during the activity, and 3. *how* the student will be expected to meet the performance demands of the activity. In most cases this information is generated as part of the student's Individualized Educational Program (I.E.P.) and may already be specified as part of the student's annual goals and short-term objectives. The illustration provides an example of how this information should be entered on FORM 2. Bob's, parents, and his teacher have decided that he should learn to use the McDonald's restaurant located near the school during the regular lunch period and to purchase after school snacks. This would include the period of 11:45 to 12:30 and 3:00 to 3:30. Bob will be expected to purchase drink items, snack items, and complete lunches. Because Bob is nonverbal and does not have good money skills he will use a communication notebook to order desired items and will pay with a $5.00 bill.

STEP	EXPLANATION
2. Identify the steps of the activity and enter them on FORM 2.	Develop a list of the steps that the student will need to go through in order to successfully complete the activity. A good way of doing this is to imagine yourself having to provide directions to another person to complete the activity. Your directions must describe the "action" to be completed by the person. Each direction should be limited to a maximum of 6 words. If you are familiar with the activity you may complete this step before going out to the training site. If you are unfamiliar with the activity complete this step in the actual performance setting. The illustration provides an example the task analysis steps for the activity of using McDonald's. Bob's teacher identified steps including entering the restaurant, goes to open register, opening the communication notebook to the correct page, showing the notebook to the cashier, removing the $5.00 bill from his wallet, giving the cashier a $5.00 bill, accepting change, moving to the left of the register, obtaining the order, locating an empty table, consuming the purchased items, cleaning the table and emptying trash, and exiting restaurant.

ILLUSTRATION OF
FORM 2
TASK ANALYSIS FORM

STUDENT *BOB* DATE *February 8, 1988*

ACTIVITY *Using Fast Food Restaurants*

Instructional Conditions:

Where: *McDonald's*

When: *1:00 to 4:00*

What: *Purchase drink and snack items*

How: *Communication notebook and a $5.00 bill*

ENVIRONMENTAL CUE	TASK ANALYSIS STEP

ILLUSTRATION OF
FORM 2
TASK ANALYSIS FORM

STUDENT BOB

DATE February 8, 1988

ACTIVITY Using Fast Food Restaurants

Instructional Conditions:

Where: McDonald's

When: 1:00 to 4:00

What: Purchase drink and snack items

How: Communication notebook and a $5.00 bill

ENVIRONMENTAL CUE	TASK ANALYSIS STEP
	1. Enter the restaurant.
	2. Approach the counter.
	3. Place order.
	4. Pay for order.
	5. Move out of line and wait.
	6. Obtain order.
	7. Locate an Table.
	8. Eat Order.
	9. Clean table and dispose of trash and tray.
	10. Exit the restaurant.

STEP	EXPLANATION
3. Identify the environmental cues for each activity step and enter them on FORM 2.	Identify the "environmental cue" that will tell the student when and how to complete each step of the activity. Environmental cues may come in many different forms including: 1. objects in the environment (e.g., a can of frozen orange juice), 2. events or actions that occur consistently in the settings (e.g., a street light changing color), 3. verbal or gestural directions provided by individuals who are consistently present in the setting (e.g., verbal request for payment by cashiers), 4. words, numerals, or symbols consistently present in the settings (e.g., the price on a cash register), 5. temporal or time cues (e.g., the time that a bus departs), or 6. successful completion of a step of the activity (e.g., exiting the store when the cashier gives you your change). In some instances more than 1 cue should control the student's completion of an activity step. For example, when crossing the street at a controlled intersection you may only cross safely when the cross light has changed and when the cars have stopped. In identifying the environmental cues for an activity step make sure you list all of the possible cues that should control the student's response. If you are familiar with the activity you may complete this step prior to going out to the restaurant. If you are not, it is recommended that you complete this step in the target training setting. In the illustration below, Bob's teacher identified only one cue for the step of "Entering the restaurant". This was the door of the restaurant. However, on the step of "Approach counter," Bob's teacher identified three separate cues including the counter, the register, and the "order" sign.

ILLUSTRATION OF
FORM 2
TASK ANALYSIS FORM

STUDENT BOB **DATE** February 8, 1988

ACTIVITY Using Fast Food Restaurants

Instructional Conditions:

Where: McDonald's

When: 1:00 to 4:00

What: Purchase drink items and snack items

How: Communication notebook and a $5.00 bill

ENVIRONMENTAL CUE	TASK ANALYSIS STEP
1. Door	1. Enter the restaurant.
2.a. Counter b. Cash Register c. "Order" sign	2. Approach the counter.
3.a. Cashier's request	3. Place order.
4.a. Price on register. b. Verbal request by cashier.	4. Pay for order.
5.a. Cashier give change b. Line c. "Pick-up" sign	5. Move out of line and wait.
6.a. Cashier's request. b. Tray	6. Obtain order.
7.a. Table b. Customers	7. Locate an Table.
8.a. Seated at table b. Drink and food containers.	8. Eat Order.
9.a. Drink and food consumed b. Drink and food containers c. Trash cans.	9. Clean tablo and dispose of trash and tray.
10.a. Doors b. Exit signs	10. Exit the restaurant.

STEP	EXPLANATION
4. Check the accuracy of the activity steps and environmental cues in the performance setting and enter changes on FORM 2. Go to Page 35. Component 3.0: Sequence tasks for instruction.	In this step, check the accuracy of the activity steps and environmental cues you recorded on FORM 2 with the actual demands of the performance setting. The easiest way to do this is to observe at least three individuals complete the activity in the performance setting. As they complete the activity compare the cues and steps on FORM 2 with their performance.

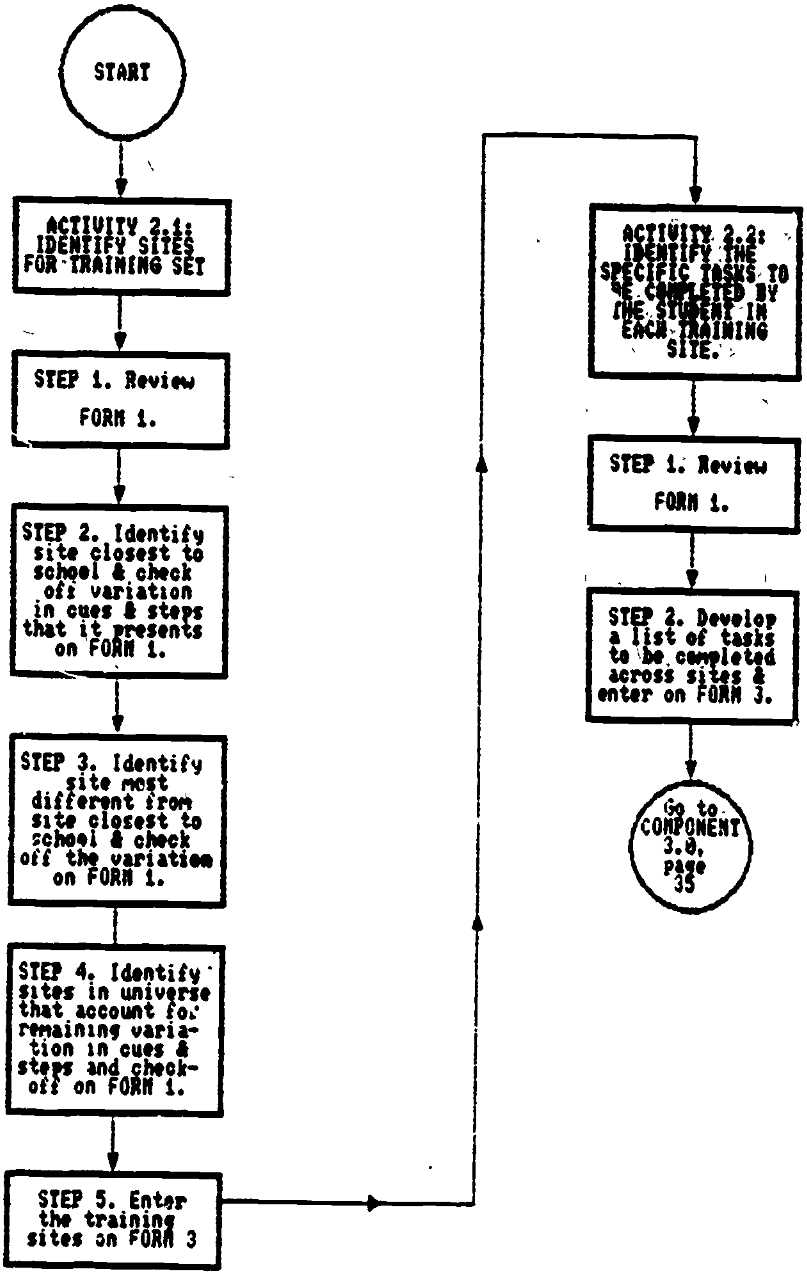
COMPONENT 2.0: SELECT TRAINING SITES AND TASKS FOR INSTRUCTION

Component 2.0 outlines the decisions and activities necessary to select training sites and tasks for instruction. In order to increase the overall efficiency of instruction the teacher should select a sub-set of sites in which training will occur. These sites should be selected so that they represent the range of variation that the student is expected to perform across. In addition, the teacher should identify the specific tasks that the student will complete in each of the training sites.

Figure 3 presents the sequence of decisions and activities necessary for teachers to select training sites and tasks.

Figure 3

COMPONENT 2.0: SELECT TRAINING SITES AND TASKS FOR INSTRUCTION



Activity 2.1: Identify Sites for the Training Set

Purpose: The major focus of this activity is to identify the minimum number of sites for instruction that will allow you to sample the range of variation in the environmental cues and general activity steps present across all of the sites included in the performance universe.

Materials: FORM 1 and FORM 3.

STEP	EXPLANATION
1. Review FORM 1.	Review FORM 1 to make sure that you have listed the variation in the environmental cues and general activity steps from all sites included in the performance universe.
2. Identify the site in the performance universe closest to the school and check off the variation in the environmental cues and general activity steps that it presents to the student on FORM 1.	From FORM 1 identify the site that is most easily and quickly reached from the school. Check off specific variation in the environmental cue(s) and general activity steps that the site presents to the student. In addition, identify the site that accounts for that cues and variation by placing the first letter of the site name beside the mark. The illustration provides an example for Bob on using fast food restaurants. Bob's teacher identified McDonald's as the easiest restaurant to reach from the school. Using FORM 1 Bob's teacher checked off "single door-push/pull" for the first generic environmental cue "Door". For the general activity step of "Enter the restaurant" he checked both "Push the door" and "Pull the door". He then checked off "On the right" for the environmental cue "Counter" and "Stainless steel" for the cue "Cash register". For the activity step of "Approach the counter", Bob's teacher checked off "Turn right and walk toward the counter. Bob's teacher continued through FORM 1 until he had checked off the variation presented by McDonald's for each environmental cue and general activity step.

ILLUSTRATION OF
FORM 1
ACTIVITY ANALYSIS FORM FOR COMMUNITY ACTIVITIES
(Adapted from Horner, Sprague, & Wilcox, 1982)

Student(s) Bob **Date** February 8, 1988

Activity Using fast food restaurants

Performance Universe:

Where: Burger King, McDonald's, Dairy Queen, Hardee's, Wendy's, Crown Burgers

When: 1:00 Pm to 4:00 pm

What: Purchase individual drink and snack items.

How: Order cards to order purchases and $5 dollar bill

Generic Environmental Cues	Variation in Cues Across Settings	Generic Activity Steps	Variation in Activity Steps
1.a. Door.	~~Single door - push/pull.~~ M^c Double door - push/pull. Double door - automatic.	1. Enter the restaurant.	~~Push the door.~~ M^c ~~Pull the door.~~ M^c Walk through the door.
2.a. Counter.	~~On the right.~~ M^c On the left. In front of door.	2. Approach the counter.	~~Turn right and walk toward the counter.~~ M^c Turn left and walk toward the counter. Walk toward the counter.
b. Cash Register.	Tan - on top of counter. ~~Stainless steel—inset in the counter.~~ M^c	2. cont	
c. "Order" sign.	Above counter.		
3.a. Cashier's request.	~~Can I help you?~~ M^c What will it be? Have you been helped? ~~Hello, welcome to~~ M^c Yes?	3. Place order.	~~Present order card of drink item.~~ M^c ~~Present order card of snack item.~~ M^c ~~Present order card of lunch.~~ M^c
4.a. Price on register.	Drinks - .55 to 1.00. Food items - .35 to 2.89. Total - .35 to 4.78.	4. Pay for order.	Give cashier $5.00 bill.
b. Verbal request by cashier.	That will be ___. __ dollars and cents. Says numbers.		
5.a. Cashier gives change.	Variable.	5. Move out of line and wait.	~~Move to right and stand by the counter.~~ M^c ~~Move to condiment bar~~ M^c
b. Line.	None to several.		
c. "Pick-up" sign.	Above counter.		

STEP	EXPLANATION
3. Identify the site which is the most different from the site closest to the school, and check off the variation it presents to the student on FORM 1.	In this step identify the site in the performance universe that is the most different from the site you selected above. Using the same procedure check off the variation in the environmental cue(s) and general activity steps it presents to the student. Bob's teacher selected Wendy's as the site that was the most different from McDonald's because it would require Bob to place his order in one location and pick it up in another location on the counter. For the first step of the activity, Bob's teacher checked off "Double door - push/pull" for the environmental cue "Door", and "Push the door" and "Pull the door" for the step of "Enter the restaurant". On the next step he checked off "On the left" for the cue of "Counter", "Tan - on top of the counter" for the cue of "Cash register", and "Above the counter" for the cue of "Order sign". For the variation in the activity step of "Approach the counter he checked off "Turn left and walk toward the counter". Bob's teacher continued to check off the variations in the environmental cues and activity steps presented by Wendy's.

ILLUSTRATION OF
FORM 1
ACTIVITY ANALYSIS FORM FOR COMMUNITY ACTIVITIES
(Adapted from Horner, Sprague, & Wilcox, 1982)

Student(s) Bob   Date February 8, 1988

Activity   Using fast food restaurants

Performance Universe:

Where: Burger King, McDonald's, Dairy Queen, Hardee's, Wendy's, Crown Burgers

When: 1:00 Pm to 4:00 pm

What: Purchase individual drink and snack items.

How: Order cards to order purchases and $5 dollar bill

Generic Environmental Cues	Variation in Cues Across Settings	Generic Activity Steps	Variation in Activity Steps
1.a. Door.	~~Single door—push/pull.~~ M^c ~~Double door—push/pull.~~ W Double door - automatic.	1. Enter the restaurant.	~~Push the door.~~ M^c, W ~~Pull the door.~~ M^c,W Walk through the door.
2.a. Counter.	~~On the right.~~ M^c, W ~~On the left.~~ W In front of door.	2. Approach the counter.	~~Turn right and walk toward the counter.~~ M^c ~~Turn left and walk toward the counter.~~ W Walk toward the counter.
b. Cash Register.	~~Tan—on top of counter.~~ W ~~Stainless steel—inset in the counter.~~ M^c	2. cont	
c. "Order" sign.	~~Above counter.~~ W		
3.a. Cashier's request.	~~Can I help you?~~ M^c What will it be? Have you been helped? ~~Hello, welcome to~~ M^c, W Yes?	3. Place order.	~~Present order card of drink item.~~ M^c,W ~~Present order card of snack item.~~ M^c, W ~~Present order card of lunch.~~ M^c,W
4.a. Price on register.	Drinks - .55 to 1.00. Food items - .35 to 2.89. Total - .35 to 4.78.	4. Pay for order.	Give cashier $5.00 bill.
b. Verbal request by cashier.	That will be __ dollars and __ cents. Says numbers.		
5.a. Cashier gives change.	Variable.	5. Move out of line and wait.	~~Move to right and stand by the counter.~~ M^c ~~Move to condiment bar~~ M^c,W
b. Line.	None to several.		
c. "Pick-up" sign.	Above counter.		

STEP	EXPLANATION
4. Identify the sites in the performance universe that account for the remaining variation in the environmental cues and activity steps and check-off the variation on FORM 1.	Continue to identify sites that allow you to check off the remaining variation in the environmental cues and activity steps. Try to select the fewest number of sites as possible to account for the remaining variation. Bob's teacher was able to account for the remaining variation in the environmental cues and activity steps in Dairy Queen. For this activity, he was able to select 3 sites for training that allowed him to present the full range of variation in the environmental cues and activity steps present in the 6 restaurants included in the performance universe.

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ILLUSTRATION OF
FORM 1
ACTIVITY ANALYSIS FORM FOR COMMUNITY ACTIVITIES
(Adapted from Horner, Sprague, & Wilcox, 1982)

Student(s) Bob **Date** February 8, 1988

Activity Using fast food restaurants

Performance Universe:

Where: Burger King, McDonald's, Dairy Queen, Hardee's, Wendy's, Crown Burgers

When: 1:00 Pm to 4:00 pm

What: Purchase individual drink and snack items.

How: Order cards to order purchases and $5 dollar bill

Generic Environmental Cues	Variation in Cues Across Settings	Generic Activity Steps	Variation in Activity Steps
1.a. Door.	~~Single door—push/pull.~~ M^c ~~Double door—push/pull.~~ W DQ ~~Double door—automatic.~~	1. Enter the restaurant.	~~Push the door.~~ M^c, W ~~Pull the door.~~ M^c,W ~~Walk through the door.~~ DQ
2.a. Counter.	~~On the right.~~ M^c, W ~~On the left.~~ W, DQ In front of door.	2. Approach the counter.	~~Turn right and walk toward the counter.~~ M^c ~~Turn left and walk toward the counter.~~ W,DQ Walk toward the counter.
b. Cash Register.	DQ ~~Tan—on top of counter.~~ W ~~Stainless steel—inset in the counter.~~ M^c	2. cont	
c. "Order" sign.	~~Above counter.~~ W, DQ		
3.a. Cashier's request.	~~Can I help you?~~ M^c ~~What will it be?~~ DQ ~~Have you been helped?~~ DQ ~~Hello, welcome to~~ M^c, W Yes?	3. Place order.	~~Present order card~~ M^c,W ~~of drink item.~~ DQ ~~Present order card of snack item.~~ M^c, W, DQ ~~Present order card~~ M^c,W ~~of lunch.~~ DQ
4.a. Price on register.	Drinks - .55 to 1.00. Food items - .35 to 2.89. Total - .35 to 4.78.	4. Pay for order.	Give cashier $5.00 bill.
b. Verbal request by cashier.	That will be ___ dollars and ___ cents. Says numbers.		
5.a. Cashier gives change.	Variable.	5. Move out of line and wait.	~~Move to right and~~ DQ ~~stand by the counter.~~ M^c ~~Move to condiment~~ M^c,W ~~bar~~ DQ
b. Line.	None to several.		
c. "Pick-up" sign.	Above counter.		

STEP	EXPLANATION
5. Enter the training sites on FORM 3.	FORM 3 is the Community Program Cover Sheet. This sheet will outline the specific information necessary to carry out training on the activity. Enter the training sites you have selected on FORM 3.
Go to page 32. Activity 2.2: Identify specific tasks to be completed by the student in each training site.	

Activity 2.2:
Identify the specific tasks to be completed by the student in each training site.

Purpose: In this activity you are simply trying to generate the list of tasks the student will have to complete in order to be successful in the training sites. For example, in using fast food restaurants Bob will have to purchase several individual items including a medium cola, a small chocolate milkshake, small fries, a cookie, coffee, and a sundae.

Materials: FORM 1 and FORM 3.

STEP	EXPLANATION
1. Review FORM 1.	In conducting the analysis of the performance settings you identified what the student would be required to do in each site. Review this information to ensure that it is complete and accurate.
2. Develop a list of the specific tasks to be completed across sites and enter on FORM 3.	Generate a specific list of the tasks that the student will do in the training sites. Bob's teacher has identified 6 individual items that Bob will need to order and purchase in the 3 training sites. These include a medium cola, a small chocolate milkshake, cookie, a small coffee, a small fries, and a sundae.
Go to page 35. Component 3.0: Sequence Training Sites and Tasks for Instruction.	

ILLUSTRATION OF
FORM 3
COMMUNITY PROGRAM SUMMARY SHEET

Student Bob

Activity: Fast Food Restaurants

Training Sites: McD, Wendy Dairy Queen

Training Schedule:

Tasks: Med. cola, sm. choc shake, cookie sm. coffee, sm. fries, sundae

Performance Criteria:

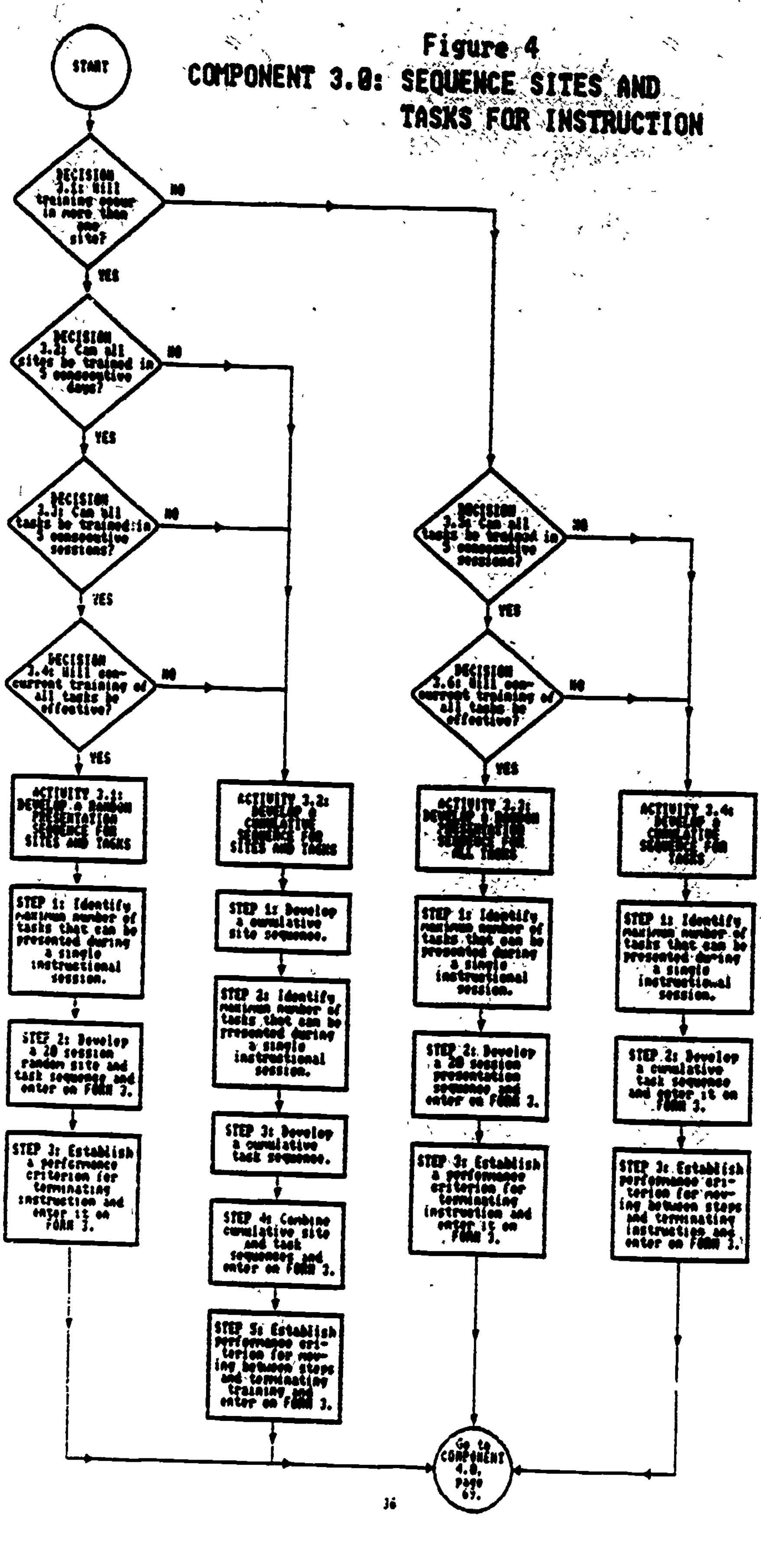
Session	Sites	Session	Tasks

COMPONENT 3.0:
SEQUENCE SITES AND TASKS FOR INSTRUCTION

Component 3.0 outlines the specific decisions and activities necessary to develop a sequence for introducing training sites and tasks to the student. This sequence will delineate what sites and tasks are presented to the student during each instructional session.

Figure 4 presents the sequence of decisions and activities necessary to complete Component 3.0.

Figure 4
COMPONENT 3.0: SEQUENCE SITES AND TASKS FOR INSTRUCTION



Decision 3.1

DECISION	ACTION
Decision 3.1: Will training occur in more than 1 site?	YES. Go To Decision 3.2, page 39. NO. Go To Decision 3.5, page 57.

Decision 3.2

DECISION	ACTION
Decision 3.2: Can training sites be presented to the student in 5 consecutive instructional sessions?	YES. Go To Decision 3.3, page 41. NO. Go To Activity 3.2, page 48.

EXPLANATION: At this point you must ask yourself if it is logistically possible to present all of the training *SITES* to the student within 5 consecutive instructional sessions. Research has shown that the effectiveness of training is increased if all sites are presented at the same time. This prevents the student learning to do the activity in a way that is unique to any single site. Generally speaking you should use a random sequencing strategy if all of the sites can be presented within 5 consecutive instructional sessions. If all of the sites can not be presented to the student within 5 sessions then you should use a cumulative sequencing strategy.

DECISION	ACTION
Decision 3.3: Can all of the tasks be presented to the student in 5 consecutive days of instruction?	YES. Go To Decision 3.4, page 43. NO. Go To Activity 3.2, page 48.

EXPLANATION: At this point you must *also* determine if it is logistically possible to present all of the *TASKS* simultaneously to the student. Research has shown that the effectiveness of training is increased if all of the tasks can be presented at the same time. This prevents the student learning to do the activity in a way that is unique to any single task. Generally speaking you should use a random sequence if all of the tasks can be presented within 5 consecutive instructional sessions. If all of the tasks can not be presented to the student within 5 sessions then you should use a cumulative sequencing strategy.

Decision 3.4

DECISION	ACTION
Decision 3.4: Will simultaneous presentation of all sites and tasks be effective with the student?	YES. Go To Activity 3.1 page 44. NO. Go To Activity 3.2 page 48.

EXPLANATION: Even if it is possible to present all of the tasks to a student in 5 sessions, simultaneous presentation of sites and tasks may not be appropriate for some students. The performance demands of completing several sites or tasks at the same time may simply "overload" some students and lead to failure during training. If the student's past learning history suggests the need to slowly introduce new material, then sites or tasks should be introduced through a cumulative sequencing strategy.

Activity 3.1: Develop a random presentation sequence for sites and tasks.

Purpose: The purpose of a random presentation sequence is to help the student learn performance strategies that will be applicable to all sites and tasks. Research has shown that when students are not required to perform across sites and tasks they often learn "misrules" about how to complete an activity. For example, if Bob was only required to order and purchase items at Wendy's he would learn to place his order at one end of the counter and to pick-up his order at the opposite end of the counter. While this strategy would allow him be successful in Wendy's, it would not be applicable at McDonald's or Dairy Queen which requires customers to order and pick-up food in the same place.

Materials: FORM 3.

STEP	EXPLANATION
1. Identify the maximum number of tasks that can be presented during a single instructional session.	In this step you should try to determine how many tasks can be presented to the student during a single instructional session. The efficiency of training will be increased if you can present more than one task during each session. In some instances you may need to balance "typical" performance with the need to present more than 1 task to a student during a session. For example, even though most people do not typically order and pay for one item then order and pay for a second item in fast food restaurants, Bob's teacher decided that he could increase the amount of practice that Bob got in each restaurant if he was required to purchase one item at a time. Bob's teacher decided that it was possible for Bob to purchase 1 drink and 1 food item during each session.
2. Develop a 20 session random presentation sequence and enter FORM 3.	Develop an instructional sequence for 20 consecutive, instructional sessions. Each session number will specify the site and tasks to be presented to the student during the session. As you design the sequence make sure that (a) each site is presented to the student at least once in every 5 instructional session, (b) each task is presented at least once every 5 instructional sessions, and (c) the presentation of the sites and tasks are as unpredictable as possible. The specific sequence that Bob's teacher developed to present sites and tasks is presented in the illustration of FORM 3.

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ILLUSTRATION OF
FORM 3
COMMUNITY PROGRAM SUMMARY SHEET

Student: Bob

Activity: Using Fast Food Restaurants

Training Sites:
Wendy's, McDonald's, Dairy Queen

Training Schedule: Daily

Tasks:
Purchase Cola, Fries, Chocolate Shake, Coffee, Cookie and Sundae

Performance Criteria:

Session/Step	Sites	Session/Step	Tasks
1.	Wendy's	1.	Cola and fries
2.	McDonald's	2.	Chocolate shake and cookie
3.	Dairy Queen	3.	Coffee and Sundae
4.	McDonald's	4.	Cola and cookie
5.	Dairy Queen	5.	Chocolate shake and fries
6.	Dairy Queen	6.	Coffee and cookie
7.	Wendy's	7.	Cola and cookie
8.	Wendy's	8.	Chocolate shake and fries
9.	McDonald's	9.	Coffee and sundae
10.	Dairy Queen	10.	Sundae and cookie
11.	Wendy's	11.	Chocolate shake and cookie
12.	McDonald's	12.	Chocolate shake and fries
13.	McDonald's	13.	Coffee and fries
14.	Wendy's	14.	Chocolate shake and fries
15.	Dairy Queen	15.	Cola and cookie
16.	McDonald's	16.	Coffee and sundae
17.	Wendy's	17.	Cola and sundae
18.	Wendy's	18.	Chocolate shake and fries
19.	Dairy Queen	19.	Chocolate shake and fries
20.	McDonald's	20.	Cola and cookie

STEP	EXPLANATION
3. Establish a performance criterion for terminating instruction on the activity and enter on FORM 3.	To ensure that the student has "mastered" the activity you will need to establish a performance criterion. The criterion should specify *how well* the student must perform the activity and *how long* they must perform at that level before you would be convinced that they were competent. There are few clear guidelines for setting criterion for community-based activities, but in general students will have to complete *all* of the steps of the activity independently in order to be successful. As such, in most activities students need to complete the activity with 100% accuracy to be successful. In addition, the difficulty and variability of community activities would suggest most students with severe handicaps will need to demonstrate independent performance across several sessions in order to be sure that they had mastered the activity. If you are unsure about how to establish a criterion for a student, it is always better to be conservative and establish a high criterion for terminating training. Providing more training trials will not hurt the student and may enhance their maintenance of the activity. The illustration of FORM 3 shows that Bob's teacher established a performance of 100% accuracy on all tasks for 2 consecutive sessions in each site. In other words, training would terminate when Bob has shown that he can purchase all of the items in each training site on 2 consecutive sessions.
Go to page 69. Component 4.0: Conduct Baseline Probe	

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ILLUSTRATION OF
FORM 3
COMMUNITY PROGRAM SUMMARY SHEET

Student: Bob

Activity: Using Fast Food Restaurants

Training Sites:
Wendy's, McDonald's, Dairy Queen

Training Schedule: Daily

Tasks:
Purchase Cola, Fries, Chocolate Shake, Coffee, Cookie and Sundae

Performance Criteria:
Independent performance on all tasks on 2 consecutive sessions in each site

Session/Step	Sites	Session/Step	Tasks
1,	Wendy's	1.	Cola and fries
2.	McDonald's	2.	Chocolate shake and cookie
3.	Dairy Queen	3.	Coffee and Sundae
4.	McDonald's	4.	Cola and cookie
5.	Dairy Queen	5.	Chocolate shake and fries
6.	Dairy Queen	6.	Coffee and cookie
7.	Wendy's	7.	Cola and cookie
8.	Wendy's	8.	Chocolate shake and fries
9.	McDonald's	9.	Coffee and sundae
10.	Dairy Queen	10.	Sundae and cookie
11.	Wendy's	11.	Chocolate shake and cookie
12.	McDonald's	12.	Chocolate shake and fries
13.	McDonald's	13.	Coffee and fries
14.	Wendy's	14.	Chocolate shake and fries
15.	Dairy Queen	15.	Cola and cookie
16.	McDonald's	16.	Coffee and sundae
17.	Wendy's	17.	Cola and sundae
18.	Wendy's	18.	Chocolate shake and fries
19.	Dairy Queen	19.	Chocolate shake and fries
20.	McDonald's	20.	Cola and cookies

Activity 3.2: Develop a cumulative sequence for sites and tasks.

Purpose: A cumulative sequence should be developed when it is logistically impossible to present all of the sites or tasks to the student within 5 consecutive instructional sessions or when simultaneous presentation of the sites or tasks will be difficult for the student. The cumulative sequence allows the teacher to systematically control both the rate and the order in which sites and tasks are introduced to the student for training.

STEP	EXPLANATION
1. Develop a cumulative site sequence.	In this step you should develop specific program steps that cumulatively introduce the sites to the student for training. The cumulative sequencing procedure is designed to build the training set one site at a time until the student can perform reliably in all of the training sites. In this sequencing procedure the teacher would begin training in a single site. When the student was able to perform reliably in this setting, the second site would be introduced for training. Training would continue in the second site until the student could perform reliably. In the next step of the sequence the student would be required to perform reliably in both sites when presented randomly. The teacher would continue to introduce 1 site at a time for training and combining it with previously trained sites until the student could perform reliably in all of the sites. It is recommended that you order sites in the same sequence as they were selected in Component 2.0. This will allow you to begin training in the site most easily accessible from school and then add sites that account for the most variation in environmental cues and responses in order. The illustration shows the sequence developed by Bob's teacher to cumulatively introduce Wendy's, McDonald's, and Dairy Queen.

Illustration

Cumulative Site Sequence for Using Fast Food Restaurants

STEP	SITE
1	McDonald's
2	Wendy's
3	Wendy's or McDonald's
4	Dairy Queen
5	Wendy's, McDonald's, or Dairy Queen.

STEP	EXPLANATION
2. Identify the maximum number of tasks that can be presented during a single instructional session.	In this step you should try to determine how may tasks may be presented during a single instructional session. The efficiency of training will be increased if you can present more than one task during each session. In some instances you may need to balance "typical" performance with the need to present more than 1 task to a student during a session. For example, even though most people do not typically order and pay for one item then order and pay for a second item in fast food restaurants, Bob's teacher decided that he could increase the amount of practice that Bob got in the restaurants if he was required to purchase snacks one item at a time. Bob's teacher decided that it was possible for Bob to purchase 1 drink and 1 food item during each session.
3. Develop a cumulative task sequence.	The procedure for developing a cumulative sequence to introduce tasks for instruction is described in step 1 above. However, it may be necessary to introduce tasks in groups rather than 1 at a time. The illustration shows the cumulative sequence that Bob's teacher developed to introduce drink and food items. Bob's teacher had decided that he could logistically present 1 drink and 1 food item during each session. His sequence is designed to add two items at a time to the training site.

Illustration

Cumulative Task Sequence for Using Fast Food Restaurants

STEP	TASKS
1	Cola and fries.
2	Chocolate shake and cookie
3	Cola or shake and fries or cookie
4	Coffee and sundae.
5	Cola, shake, or coffee and fries, cookie, or sundae.

STEP	EXPLANATION
4. Combine the cumulative site sequence with the cumulative task sequence and enter on FORM 3.	The cumulative sequence for the tasks should be combined with a cumulative sequence for introducing the sites. This will provide specific program steps for introducing tasks in each of the training sites. In the first step of the sequence the student learns all tasks in the first site. In the second step of the sequence the student learns all tasks in the second site. In the third step, the student is required to perform all tasks in either site when presented randomly. This procedure continues until the student is able to complete all tasks in each of the training sites. The combined site and task sequence that Bob's teacher developed is presented in the illustration of FORM 3. Instruction would begin in McDonald's on purchasing a cola and fries. When Bob could purchase a) a cola and fries, he would be required to purchase b) a chocolate shake and a cookie. In the next step, Bob would be required to purchase a cola or a chocolate shake and fries or a cookie. These items would be presented randomly. The remaining items would be introduced to Bob at McDonald's in the same fashion. When Bob is able to purchase all of the items in McDonald's, the items would be introduced at Wendy's. Training would continue until he was able to purchase all items at Wendy's. In the next step Bob would be required to purchase any item in either Wendy's or McDonald's when presented on a random basis. The sequence would continue in the same manner until Bob could purchase all items in all 3 training sites. *One cautionary note.* It is important to occasionally test to see if students can complete tasks independently in training sites that have not been introduced. Because the task sequence is repeated several times across sites it is not at all uncommon for students to have mastered the activity without completing all of the site steps. If the student can perform most of the tasks in sites in which they have not received training you should go to the last step of the sequence and complete training on the activity.

ILLUSTRATION OF
FORM 3
COMMUNITY PROGRAM SUMMARY SHEET

Student: Bob

Activity: Using Fast Food Restaurants

Training Sites:
Wendy's, McDonald's, Dairy Queen

Training Schedule: ____________

Tasks: Cola, Coffee, Chocolate shake, Fries, Cookie, and Sundae

Performance Criteria:

Session/Step	Sites	Session/Step	Tasks
1.	McDonald's	a.	Cola and fries.
		b.	Chocolate shake and cookies.
		c.	Cola, fries, chocolate shake, cookies.
		d.	Coffee and sundae.
		e.	Cola, fries, chocolate shake, cookies, coffee, or sundae.
2.	Wendy's	Repeat a-e	
3.	Wendy's or McDonald's	e.	Cola, Fries, Chocolate shake, cookies, coffee, or sundae.
4.	Dairy Queen	a.	Cola and fries.
		b.	Chocolate shake and cookies
		c.	Cola, fries, chocolate shake.
		d.	Coffee and Sundae
		e.	Cola, fries, chocolate shake, cookies, coffee or sundae.
5.	Wendy's McDonald's or Dairy Queen	e.	Cola, fries, chocolate shake, cookies, coffee, or sundae.

STEP	EXPLANATION
5. Establish a performance criterion for moving between steps and for terminating training and enter on FORM 3.	To ensure that the student has "mastered" the activity you will need to establish a performance criterion for moving between steps of the sequence and for terminating training. The criterion should specify *how well* the student must perform the activity and *how long* they must perform at that level before you would be convinced that they were competent. There are few clear guidelines for setting criterion for community-based activities, but in general students will have to complete *all* of the steps of the activity independently in order to be successful. As such in most activities students need to complete the activity with 100% accuracy to be successful. In addition, the difficulty and variability of community activities would suggest most students with severe handicaps will need to demonstrate independent performance across several sessions in order to be sure that they had mastered the activity. If you are unsure about how to establish a criterion for a student, it is always better to be conservative and establish a high criterion for terminating training. Providing more training trials will not hurt the student and may enhance their maintenance of the activity. The illustration of FORM 3 shows that Bob's teacher established a performance of 100% accuracy on all tasks for 2 consecutive sessions in each site. This same criterion is used to decide when to move to the next step of the sequence or when training should be terminated.
Go to page 69. Component 4.0: Conduct Baseline Probe.	

2?5

Figure 1

DESIGN OF COMMUNITY-BASED INSTRUCTIONAL PROGRAMS

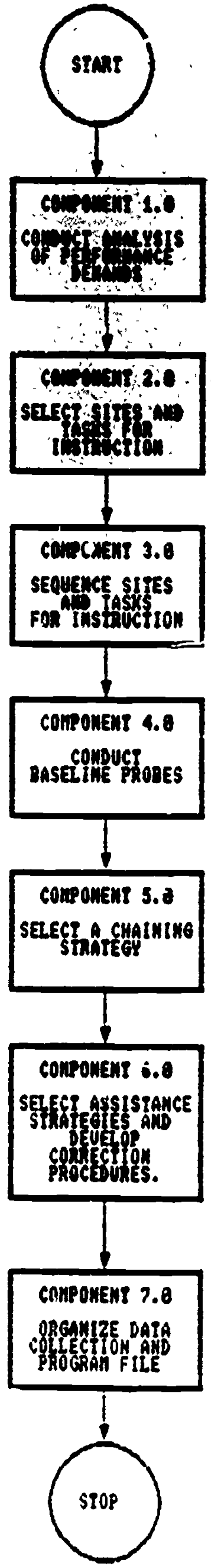

ILLUSTRATION OF
FORM 3
COMMUNITY PROGRAM SUMMARY SHEET

Student: Bob

Activity: Using Fast Food Restaurants

Training Sites:
Wendy's, McDonald's, Dairy Queen

Training Schedule: Daily

Tasks: Cola, Coffee, Chocolate shake, Fries, Cookie, and Sundae

Performance Criteria: Independent performance on all tasks on 2 consecutive sessions in each site.

Session/Step	Sites	Session/Step	Ta
1.	McDonald's	a.	Cola and fries.
		b.	Chocolate shake and cookies.
		c	Cola, fries, chocolate shake, cookies.
		d.	Coffee and sundae.
		e.	Cola, fries, chocolate shake, cookies, coffee, or sundae.
2,	Wendy's	Repeat a-e	
3.	Wendy's or McDonald's	e.	Cola, Fries, Chocolate shake, cookies, coffee, or sundae.
4.	Dairy Queen	a.	Cola and fries.
		b.	Chocolate shake and cookies
		c.	Cola, fries, chocolate shake.
		d.	Coffee and Sundae
		e.	Cola, fries, chocolate shake, cookies, coffee or sundae.
5.	Wendy's McDonald's or Dairy Queen	e.	Cola, fries, chocolate shake, cookies, coffee, or sundae.

Decision 3.5

DECISION	ACTION
Decision 3.5: Can all of the tasks be presented to the student in 5 consecutive instructional sessions?	YES. Go To Decision 3.6, page 59. NO. Go To Activity 3.4, page 64.

EXPLANATION: At this point you must also determine if it is logistically possible to present all of the tasks simultaneously to the student. Research has shown that the effectiveness of training is increased if all of the tasks can be presented at the same time. This prevents the student learning to do the activity in a way that is unique to any single task. Generally speaking you should use a random sequence if all of the tasks can be presented within 5 consecutive instructional sessions. If all of the tasks can not be presented to the student within 5 sessions then you should use a cumulative sequencing strategy.

2?8

Decision 3.6

DECISION	ACTION
Decision 3.6: Will simultaneous presentation of all tasks be effective with the student?	YES. Go To Activity 3.3, page 60. NO. Go To Activity 3.4, page 64.

EXPLANATION: Even if it is possible to present all of the tasks to a student in 5 sessions, simultaneously presentation of tasks may not be appropriate for some students. The performance demands of completing several tasks at the same time may simply "overload" some students and lead to failure during training. If the student's past learning history suggests the need to slowly introduce new material then tasks should be introduced through a cumulative sequencing strategy.

Activity 3.3: Develop a random presentation sequence for all tasks.

Purpose: The purpose for randomly presenting tasks across instructional sessions is to help the student learn performance strategies that will be applicable to all sites and tasks. Research has shown that when students are not required to perform across tasks they often learn "misrules" about how to complete an activity. For example, if Bob was only required to use his communication notebook to order a cola he may not learn to differentiate between the order card for cola and the other items.

Materials: FORM 3.

STEP	EXPLANATION
1. Identify the maximum number of tasks that can be presented during a single instructional session.	In this step you should try to determine how many tasks may be presented to the student during a single instructional session. The efficiency of training will be increased if you can present more than one task during each session. In some instances you may need to balance "typical" performance with the need to present more than 1 task to a student during a session. For example, even though most people do not typically order and pay for one item then order and pay for a second item in fast food restaurants, Bob's teacher decided that he could increase the amount of practice that Bob got in the restaurants if he was required to purchase snacks one item at a time. Bob's teacher decided that it was possible for Bob to purchase 1 drink and 1 food item during each session.
2. Develop a 20 session presentation sequence and enter it on FORM 3.	Develop an instructional sequence consisting of 20 individual steps. Each step will specify the tasks to be presented to the student during each instructional session. As you design the sequence make sure that (a) each task is presented at least once every 5 instructional sessions, and (b) the presentation of the tasks are as unpredictable as possible. The specific sequence that Bob's teacher developed to present tasks is presented in the illustration of FORM 3.

ILLUSTRATION OF
FORM 3
COMMUNITY PROGRAM SUMMARY SHEET

Student: Rob

Activity: Using Fast Food Restaurants

Training Sites: McDonald's

Training Schedule: Daily

Tasks:
Purchase Cola, Fries, Chocolate Shake, Coffee, Cookie and Sundae

Performance Criteria:

Session/Step	Sites	Session/Step	Tasks
		1.	Cola and fries
		2.	Chocolate shake and cookie
		3.	Coffee and Sundae
		4.	Cola and cookie
		5.	Chocolate shake and fries
		6.	Coffee and cookie
		7.	Cola and cookie
		8.	Chocolate shake and fries
		9.	Coffee and sundae
		10.	Sundae and cookie
		11.	Chocolate shake and cookie
		12.	Chocolate shake and fries
		13.	Coffee and fries
		14.	Chocolate shake and fries
		15.	Cola and cookie
		16.	Coffee and sundae
		17.	Cola and sundae
		18.	Chocolate shake and fries
		19.	Chocolate shake and fries
		20.	Cola and cookies

STEP	EXPLANATION
3. Establish a performance criterion for terminating instruction on the activity and enter on FORM 3. Go to page 69. Component 4.0: Conduct Baseline Probes	To ensure that the student has "mastered" the activity you will need to establish a performance criterion. The criterion should specify *how well* the student must perform the activity and *how long* they must perform at that level before you would be convinced that they were competent. There are few clear guidelines for setting criterion for community-based activities, but in general students will have to complete *all* of the steps of the activity independently in order to be successful. As such in most activities students need to complete the activity with 100% accuracy to be successful. In addition, the difficulty and variability of community activities would suggest most students with severe handicaps will need to demonstrate independent performance across several sessions in order to be sure that they had mastered the activity. If you are unsure about how to establish a criterion for a student, it is always better to be conservative and establish a high criterion for terminating training. Providing more training trials will not hurt the student and may enhance their maintenance of the activity. The illustration of FORM 3 shows that Bob's teacher established a performance of 100% accuracy on all tasks for 2 consecutive sessions. In other words, training would terminate when Bob has shown that he can purchase all of the items on 2 consecutive sessions.

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ILLUSTRATION OF
FORM 3
COMMUNITY PROGRAM SUMMARY SHEET

Student: Bob

Activity: Using Fast Food Restaurants

Training Sites: McDonald's

Training Schedule: Daily

Tasks:
Purchase Cola, Fries, Chocolate Shake, Coffee, Cookie and Sundae

Performance Criteria: Independent performance on all tasks on 2 consecutive sessions

Session/Step	Sites	Session/Step	Tasks
		1.	Cola and fries
		2.	Chocolate shake and cookie
		3.	Coffee and Sundae
		4.	Cola and cookie
		5.	Chocolate shake and fries
		6.	Coffee and cookie
		7.	Cola and cookie
		8.	Chocolate shake and fries
		9.	Coffee and sundae
		10.	Sundae and cookie
		11.	Chocolate shake and cookie
		12.	Chocolate shake and fries
		13.	Coffee and fries
		14.	Chocolate shake and fries
		15.	Cola and cookie
		16.	Coffee and sundae
		17.	Cola and sundae
		18.	Chocolate shake and fries
		19.	Chocolate shake and fries
		20.	Cola and cookies

Activity 3.4: Develop a cumulative sequence for tasks.

Purpose: A cumulative sequence should be developed when it is logistically impossible to present all of the tasks to the student within 5 consecutive instructional sessions or when simultaneous presentation of the tasks will be difficult for the student. The cumulative sequence allows the teacher to systematically control both the rate and the order in which tasks are introduced to the student for training.

Materials: FORM 3.

STEP	EXPLANATION
1. Identify the maximum number of tasks that can be presented during a single instructional session.	In this step you should try to determine how many tasks may be presented during a single instructional session. In some instances you may need to balance "typical" performance with the need to present more than 1 task to a student during a session. For example, even though most people do not typically order and pay for one item then order and pay for a second item in fast food restaurants, Bob's teacher decided that he could increase the amount of practice that Bob got in the restaurants if he was required to purchase snacks one item at a time. Bob's teacher decided that it was possible for Bob to purchase 1 drink and 1 food item during each session.
2. Develop a cumulative task sequence and enter on Form 3.	In this step you should develop a cumulative sequence to introduce each of the tasks. The cumulative sequencing procedure is designed to build the training set one task at a time until the student can perform reliably on all of the tasks. In this sequencing procedure the teacher would begin training on a single task. When the student was able to perform reliably on this task, the second task would be introduced for training. Training would continue on the second task until the student could perform reliably. In the next step of the sequence the student would be required to perform reliably on both tasks when presented randomly. The teacher would continue to introduce 1 task at a time for training and combining it with previously trained tasks until the student could perform reliably all of the tasks. The illustration, Bob's teacher decided that he could logistically present 1 drink and 1 food item during each session. His sequence is designed to add two items at a time for training.

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Illustration

Cumulative Task Sequence for Using Fast Food Restaurants

STEP	TASKS
1	Cola and fries.
2	Chocolate shake and cookie
3	Cola or shake and fries or cookie
4	Coffee and sundae.
5	Cola, shake, or coffee and fries, cookie, or sundae.

STEP	EXPLANATION
3. Establish a performance criterion for moving between steps and for terminating training and enter on FORM 3.	To ensure that the student has "mastered" the activity you will need to establish a performance criterion for moving between steps of the sequence and for terminating training. The criterion should specify *how well* the student must perform the activity and *how long* they must perform at that level before you would be convinced that they were competent. There are few clear guidelines for setting criterion for community-based activities, but in general students will have to complete *all* of the steps of the activity independently in order to be successful. As such in most activities students need to complete the activity with 100% accuracy to be successful. In addition, the difficulty and variability of community activities would suggest most students with severe handicaps will need to demonstrate independent performance across several sessions in order to be sure that they had mastered the activity. If you are unsure about how to establish a criterion for a student, it is always better to be conservative and establish a high criterion for terminating training. Providing more training trials will not hurt the student and may enhance their maintenance of the activity. The illustration of FORM 3 shows that Bob's teacher established a performance of 100% accuracy on all tasks for 2 consecutive sessions. This same criterion is used to decide when to move to the next step of the sequence.
Go to page 69. Component 4.0: Conduct Baseline Probe.	

ILLUSTRATION OF
FORM 3
COMMUNITY PROGRAM SUMMARY SHEET

Student: Bob

Activity:

Training Sites:
McDonald's

Training Schedule:

Tasks: Cola, Coffee, Chocolate shake, Fries, Cookie, and Sundae

Performance Criteria: Independent performance on all tasks on 2 consecutive sessions .

Session/Step	Sites	Session/Step	Tasks
1.	McDonald's		Cola and fries.
2.	McDonald's		Chocolate shake and cookies.
3.	McDonald's		Cola, fries, chocolate shake, cookies.
4.	McDonald's		Coffee and sundae.
5.	McDonald's		Cola, fries, chocolate shake, cookies, coffee, or sundae.

COMPONENT 4.0: CONDUCT BASELINE PROBES

Component 4.0 describes the procedures necessary to identify the steps of the activity that the student can not perform and the level of assistance that will be necessary for them to complete each step successfully. This information will provide the basis for selecting an assistance strategy and a chaining strategy for instruction.

Figure 5 presents the sequence of decisions and activities necessary to carry out the Baseline probe.

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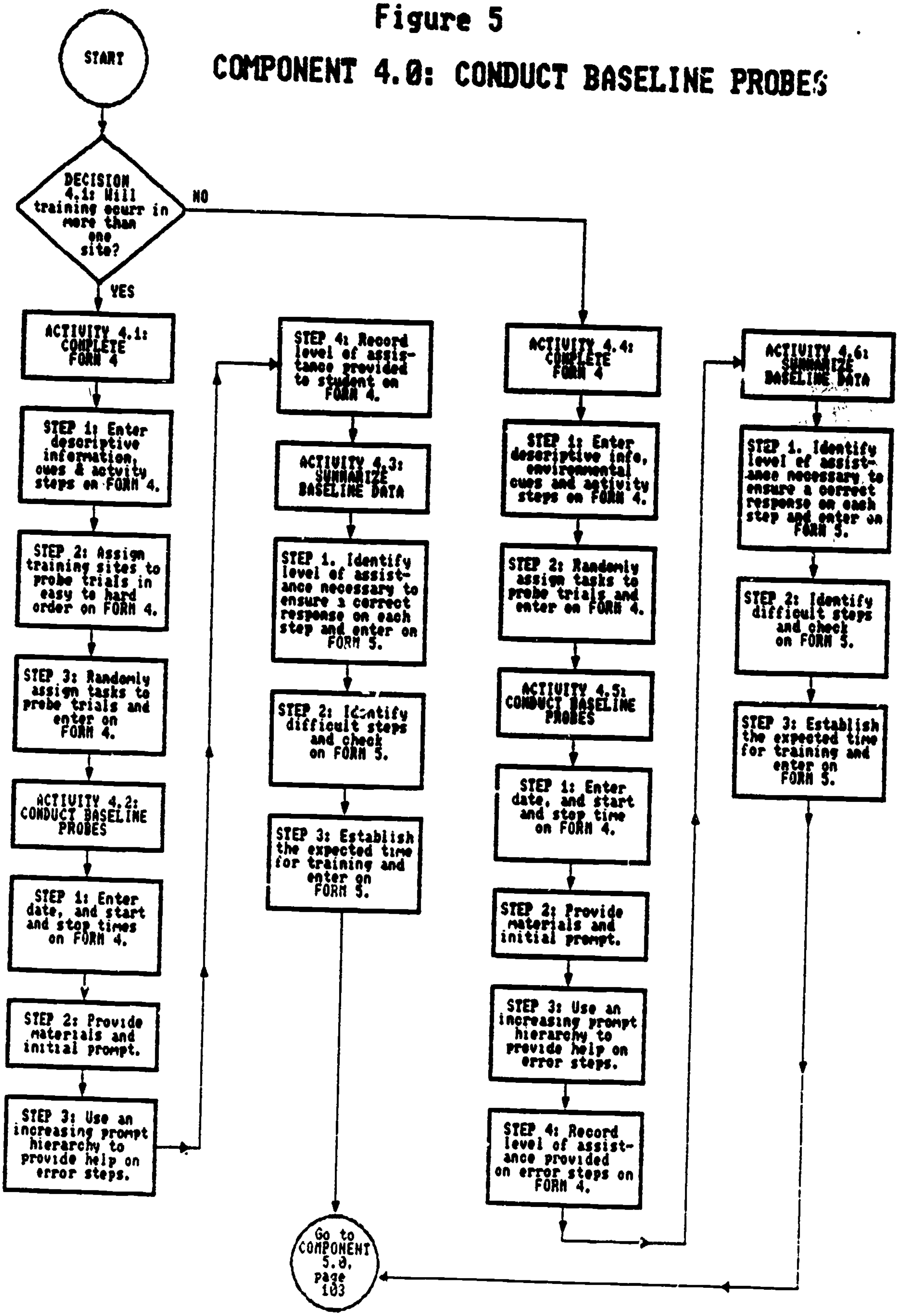
Figure 5

COMPONENT 4.0: CONDUCT BASELINE PROBES



DECISION 4.1

STEP	EXPLANATION
Decision 4.1 Will training occur in more than 1 site.	YES. Go To Activity 4.1, page 72 NO. Go To Activity 4.4, page 88

ACTIVITY 4.1: Complete FORM 4.

Purpose: To develop a sequence for presenting training sites and tasks to students during baseline probe sessions.

Materials: FORM 1 and FORM 4.

STEP	EXPLANATION
1. Enter the student's name and the activity on Form.	Enter the student's name and the activity on Form 4. From FORM 1 enter the environmental cues and general activity steps. The illustration of FORM 4 shows how Bob's teacher entered this information.

ILLUSTRATION OF FORM 4 BASELINE PROBE RECORD SHEET

STUDENT BOB

ACTIVITY Fast Food Restaurant

+ - NO ASSISTANCE
I - INDIRECT VERBAL
D - DIRECT VERBAL
G- GESTURE

M - MODEL
PP - PHYSICAL PRIME
FP - FULL PHYSICAL

ENVIRONMENTAL CUE	ACTIVITY STEP	DATE/SITE/TIME/TASK				
1.a. Door	1. Enter the restaurant					
2.a. Counter b. Cash register c. "Order sign"	2. Approach counter					
3.a. Verbal request	3. Order					
4.a. Price b. Verbal prompt	4. Pay for order					
5.a. Change b. Line c. "Pick-up here" sign	5. Move out of line and wait					
6.a. Cashier request b. Tray	6. Obtain order					
7.a. Table	7. Locate an empty table					
8.a. Seated at table b. Containers	8. Eat order					
9.a. Drink & food consumed b. Trash can	9. Clean dispose of trash					
10.a. Door b. Exit sign	10. Exit Restaurant					

STEP	EXPLANATION
2. Assign training sites to probe trials/sessions in an easy to hard progression and enter on FORM 4.	In this step you are trying to develop the order in which training sites will be presented to the student during probe trials/sessions. Generally speaking it is best to present the sites in their order of difficulty. This will allow you to pinpoint how the student responds across the variation present in the training sites and to identify precise assistance strategies and correction procedures. Based on his General Case Analysis of the training sites, Bob's teacher decided that McDonald's was the easiest of the 3 restaurants because Bob would only be required to order and pay for items in the same place. He selected Dairy Queen as the next most difficult because Bob would be required to place and pay for his order in one place and pick it up in another. Finally, Bob's teacher felt that Wendy's was the most difficult because of the need to order and pay for items in one place and pick it up in another, and the amount of traffic usually present. The illustration shows how this information was entered on the FORM.

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ILLUSTRATION OF
FORM 4
BASELINE PROBE RECORD SHEET

STUDENT BOB

ACTIVITY Fast Food Restaurant

+ - NO ASSISTANCE
I - INDIRECT VERBAL
D - DIRECT VERBAL
G- GESTURE

M - MODEL
PP - PHYSICAL PRIME
FP - FULL PHYSICAL

ENVIRONMENTAL CUE	ACTIVITY STEP	DATE/SITE/TIME/TASK				
		McDlds	D.Queen	Wendy's		
1.a. Door	1. Enter the restaurant					
2.a. Counter b. Cash register c. "Order sign"	2. Approach counter					
3.a. Verbal request	3. Order					
4.a. Price b. Verbal prompt	4. Pay for order					
5.a. Change b. Line c. "Pick-up here" sign	5. Move out of line and wait					
6.a. Cashier request b. Tray	6. Obtain order					
7.a. Table	7. Locate an empty table					
8.a. Seated at table b. Containers	8. Eat order					
9.a. Drink & food consumed b. Trash can	9. Clean dispose of trash					
10 a. Door b. Exit sign	10. Exit Restaurant					

STEP	EXPLANATION
3. Randomly assign tasks to probe trials/sessions and enter FORM 4.	You should randomly assign tasks to probe trials. If possible present all tasks in each site. If this is not logistically feasible then select subset of tasks that represent the range of difficulty of tasks in the training set. The illustration of FORM 4 indicates that Bob's teacher assigned cola and fries to McDonald's, chocolate shake and cookie to Dairy Queen, and coffee and sundae to Wendy's.
Go to page 78. ACTIVITY 4.2 Conduct Baseline probes in all training sites.	

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ILLUSTRATION OF
FORM 4
BASELINE PROBE RECORD SHEET

STUDENT BOB

ACTIVITY Fast Food Restaurant

+ - NO ASSISTANCE
I - INDIRECT VERBAL
D - DIRECT VERBAL
G- GESTURE

M - MODEL
PP - PHYSICAL PRIME
FP - FULL PHYSICAL

ENVIRONMENTAL CUE	ACTIVITY STEP	DATE/SITE/TIME/TASK				
		McDlds	D.Queen	Wendy's		
		Coke & Fries	Shake & Cookie	Coffee & Sundae		
1.a. Door	1. Enter the restaurant					
2.a. Counter b. Cash register c. "Order sign"	2. Approach counter					
3.a. Verbal request	3. Order					
4.a. Price b. Verbal prompt	4. Pay for order					
5.a. Change b. Line c. "Pick-up here" sign	5. Move out of line and wait					
6.a. Cashier request b. Tray	6. Obtain order					
7.a. Table	7. Locate an empty table					
8.a. Seated at table b. Containers	8. Eat order					
9.a. Drink & food consumed b. Trash can	9. Clean table & dispose of trash					
10.a. Door b. Exit sign	10. Exit Restaurant					

ACTIVITY 4.2: Conduct Baseline probes in all training sites.

Purpose: To determine how students will perform across the sites and tasks included in the training set. This information will be used to identify the level of assistance that will be necessary to ensure correct responding during training, identify difficult steps that may require mass practice or simulation training, and to establish an estimate of how much time will be required during each instructional session to carry out training.

Materials: FORM 4 and all materials required by the student to complete the activity.

STEP	EXPLANATIO'
1. Enter date, and start and stop time on FORM 4.	List the date, the time the probe trial began, and the time that the probe tria! ended on FORM 4. The "time" should include the amount of time required to travel to and from the site The illustration of FORM 4 shows how Bob's teacher entered this information. For example, the probe trial at McDonald's was conducted on February 22. The probe trial was started at 1:00 pm and was ended at 1:25 pm.
2. Provide all materials and initial prompt to student.	Begin each probe trial by providing the student with all of the materials necessary to complete the activity and an initial prompt to begin the activity. For example, on the first probe trial Bob's teacher took him to McDonald's. When they arrived he gave Bob the order cards for a cola and fries and a $5.00 bill. Then he gave him the prompt "Bob, go buy a cola and fries".

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ILLUSTRATION OF
FORM 4
BASELINE PROBE RECORD SHEET

STUDENT BOB

ACTIVITY Fast Food Restaurant

+ - NO ASSISTANCE
I - INDIRECT VERBAL
D - DIRECT VERBAL
G- GESTURE

M - MODEL
PP - PHYSICAL PRIME
FP - FULL PHYSICAL

ENVIRONMENTAL CUE	ACTIVITY STEP	DATE/SITE/TIME/TASK				
		2/22	2/23	2/24		
		McDlds	D.Queen	Wendy's		
		1:00 - 1:25	1:15 - 1:50	2:20 - 3:00		
		Coke & Fries	Shake & Cookie	Coffee & Sundae		
1.a. Door	1. Enter the restaurant					
2.a. Counter b. Cash register c. "Order sign"	2. Approach counter					
3.a. Verbal request	3. Order					
4.a. Price b. Verbal prompt	4. Pay for order					
5.a. Change b. Line c. "Pick-up here" sign	5. Move out of line and wait					
6.a. Cashier request b. Tray	6. Obtain order					
7.a. Table	7. Locate an empty table					
8.a. Seated at table b. Containers	8. Eat order					
9.a. Drink & food consumed b. Trash can	9. Clean dispose of trash					
10.a. Door b. Exit sign	10. Exit Restaurant					

STEP	EXPLANATION
3. Use an increasing prompt hierarchy to provide assistance on error steps.	When the student makes an error on an activity step use increasing levels of assistance to prompt the correct response. The general sequence for these prompts should be an indirect verbal prompt, a direct verbal prompt or a gesture, a model, a physical prime, and full physical assistance. This procedure will allow you to identify the minimum level of assistance necessary to achieve a correct response by the student on each step of the activity. For example, in McDonald's Bob correctly entered the restaurant and approached the counter. However, when the cashier asked him for his order he did not respond. Bob's teacher then said "Bob what do you do?", but he still did not present the card to the cashier. Bob's teacher then said "Bob, show her your notebook.", but he still not respond. Finally, his teacher said "Bob, show her your notebook" and he touched Bob's arm lightly to move it in to the correct position to show the card to the cashier.
4. Record the level of assistance provided to student on FORM 4	In this step you simply record the amount of assistance you provided to the student on each step of the activity. This is done on FORM 4 using the prompt code. There are 7 different possible codes including a "+" which means the student did the step without assistance, "I" indicates that the student performed the step with an indirect verbal prompt, "D" indicates that the student completed the step with a direct verbal prompt, a "G" indicates that the student completed the step with a gestural cue, a "M" indicates that a model was provided to the student, a "PP" indicates that the teacher provided a physical prime to the student, and "FP" indicates that the student required full physical assistance to complete the activity. When prompts are combined then the teacher simply records all the types of prompts provided to the student. The illustration of FORM 4 shows the prompts that Bob's teacher provided to him on each step of the activity in each of the training sites.
Go to page 82. ACTIVITY 4.3: Summarize Baseline data.	

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ILLUSTRATION OF
FORM 4
BASELINE PROBE RECORD SHEET

STUDENT BOB

ACTIVITY Fast Food Restaurant

+ - NO ASSISTANCE
I - INDIRECT VERBAL
D - DIRECT VERBAL
G- GESTURE

M - MODEL
PP - PHYSICAL PRIME
FP - FULL PHYSICAL

ENVIRONMENTAL CUE	ACTIVITY STEP	DATE/SITE/TIME/TASK				
		2/22	2/23	2/24		
		McDlds	D.Queen	Wendy's		
		1:00 - 1:25	1:15 - 1:50	2:20 - 3:00		
		Coke & Fries	Shake & Cookie	Coffee & Sundae		
1.a. Door	1. Enter the restaurant	+	+	+		
2.a. Counter b. Cash register c. "Order sign"	2. Approach counter	+	D + G	D + G		
3.a. Verbal request	3. Order	D + PP	D + PP	D + PP		
4.a. Price b. Verbal prompt	4. Pay for order	D + PP	D + PP	D + PP		
5.a. Change b. Line c. "Pick-up here" sign	5. Move out of line and wait	I	I	D + G		
6.a. Cashier request b. Tray	6. Obtain order	D	D	D		
7.a. Table	7. Locate an empty table	+	+	+		
8.a. Seated at table b. Containers	8. Eat order	+	+	+		
9.a. Drink & food consumed b. Trash can	9. Clean dispose of trash	D	D + G	I		
10.a. Door b. Exit sign	10. Exit Restaurant	+	+	+		

ACTIVITY 4.3: Summarize Baseline data.

Purpose: This activity is focused on (a) identifying the level of assistance necessary to ensure a correct response by the student across all training sites and tasks, (b) identify steps of the activity that are extremely difficult for the student to complete, and (c) establishing an estimate of how much time will need to be scheduled for training.

Materials: FORM 4 and FORM 5.

STEP	EXPLANATION
1. Identify the level of assistance necessary to ensure a correct response on each activity step and enter on FORM 5.	Examine FORM 4 to identify the maximum amount of assistance provided to the student on each activity step across all of the training sites. This prompt will be used later to develop a response prompting and fading procedure for training. Enter this prompt next to the appropriate activity step on FORM 5. The illustration FORM 5 shows the level of assistance that Bob's teacher identified for each step of the activity of using fast food restaurants. For example, Bob's teacher determined that Bob would require a direct verbal plus a gestural cue for the step of "Approach the counter", a direct verbal prompt plus a physical prime for the steps of "Order" and "Pay for order", a direct verbal plus a gestural prompt on the step of "Move out of line and wait", a direct verbal for "Obtain order", and direct verbal and gestural prompts for the step 'Clean table and dispose of trash and tray". Bob would not require prompts on the steps of "Enter the restaurant", "Locate an empty table", "Eat order," and "Exit".

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ILLUSTRATION OF
FORM 5
BASELINE SUMMARY SHEET

STUDENT Bob ________________ ACTIVITY Fast Food Restaurant

ESTIMATED TRAINING TIME______

ENVIRONMENTAL CUE	ACTIVITY STEP	PROMPT LEVEL	DIFFICULT STEP (✓)
1.a. Door	1. Enter the restaurant	None	
2.a. Counter b. Cash register c. "Order size"	2. Approach counter	Direct verbal plus a gesture.	
3.a. Verbal request	3. Order	Direct verbal plus a physical prime	
4.a. Price b. Verbal request	4. Pay for order	Direct verbal plus a physical prime	
5.a. Change b. Line c. Pick-up sign	5. Move out of line and wait	Direct verbal plus a gesture	
6.a. Cashier request b. Tray	6. Obtain order	Direct Verbal	
7.a. Table	7. Locate empty table	None	
8 a. Seated at table b. Containers	8. Eat order	None	
9.a. Drink & food consumed b. trash can	9. Clean table and dispose of trash	Direct verbal plus a gesture	
10.a. Door b. Exit sign	10. Exit restaurant	None	

STEP	EXPLANATION
2. Identify difficult steps and check on FORM 5.	Based on the data entered on FORM 5 and your observation of the student's performance during probe sessions, identify steps of the activity that the student will not master quickly in the actual training sites. These usually include those steps on which the student will need to have "extra" practice in order learn the correct response. Enter a check beside these difficult steps on FORM 5. The illustration of FORM 5 indicates that the steps that Bob's teacher identified as "difficult" were "Order" and "Pay for order". These steps were selected because (a) Bob required a significant amount of assistance in all three of the training sites and (b) Bob would only be provided 2 trials per session on these steps in the actual training sites.

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ILLUSTRATION OF
FORM 5
BASELINE SUMMARY SHEET

STUDENT Bob ACTIVITY Fast Food Restaurant

ESTIMATED TRAINING TIME______

ENVIRONMENTAL CUE	ACTIVITY STEP	PROMPT LEVEL	DIFFICULT STEP (✓)
1.a. Door	1. Enter the restaurant	None	
2.a. Counter b. Cash register c. "Order size"	2. Approach counter	Direct verbal plus a gesture.	
3.a. Verbal request	3. Order	Direct verbal plus a physical prime	✓
4.a. Price b. Verbal request	4. Pay for order	Direct verbal plus a physical prime	✓
5.a. Change b. Line c. Pick-up sign	5. Move out of line and wait	Direct verbal plus a gesture	
6.a. Cashier request b. Tray	6. Obtain order	Direct Verbal	
7.a. Table	7. Locate empty table	None	
8.a. Seated at table b. Containers	8. Eat order	None	
9.a. Drink & food consumed b. trash can	9. Clean table and dispose of trash	Direct verbal plus a gesture	
10.a. Door b. Exit sign	10. Exit restaurant	None	

STEP	EXPLANATION
3. Establish the expected time for training and enter on FORM 5. Go to page 103.Component 5.0 Select a Chaining Strategy	Calculate the average amount of time to carry out training. This is done by adding the total time required complete each probe trial and dividing it by the total number of probe trials presented to the student. Enter the average on FORM 5 The illustration of FORM 5 indicates that the estimated time to conduct training was 33 minutes. The probe trial in McDonald's required 25 minutes, in Dairy Queen the trial was 35 minutes in length, and in Wendy's Bob required 40 minutes to complete the trial. Bob's teacher added the times of the three trials (25 + 35 + 40 = 100) and divided the sum by the total number of trials (100 ÷ 3 = 33). Recall that training time includes travel to and from the training site.

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ILLUSTRATION OF
FORM 5
BASELINE SUMMARY SHEET

STUDENT Bob ACTIVITY Fast Food Restaurant

ESTIMATED TRAINING TIME 35min

ENVIRONMENTAL CUE	ACTIVITY STEP	PROMPT LEVEL	DIFFICULT STEP (✓)
1.a. Door	1. Enter the restaurant	None	
2.a. Counter b. Cash register c. "Order size"	2. Approach counter	Direct verbal plus a gesture.	
3.a. Verbal request	3. Order	Direct verbal plus a physical prime	✓
4.a. Price b. Verbal request	4. Pay for order	Direct verbal plus a physical prime	✓
5.a. Change b. Line c. Pick-up sign	5. Move out of line and wait	Direct verbal plus a gesture	
6.a. Cashier request b. Tray	6. Obtain order	Direct Verbal	
7.a. Table	7. Locate empty table	None	
8.a. Seated at table b. Containers	8. Eat order	None	
9.a. Drink & food consumed b. trash can	9. Clean table and dispose of trash	Direct verbal plus a gesture	
10.a. Door b. Exit sign	10. Exit restaurant	None	

ACTIVITY 4.4: Complete FORM 4.

Purpose: To develop a record sheet for tracking the student's performance across tasks and establish a sequence for presenting tasks to students during probe sessions.

Materials: FORM 2 and FORM 4.

STEP	EXPLANATION
1. Enter descriptive information, environmental cues, and general activity steps on FORM 4.	Enter the student's name and the activity on FORM 4. From FORM 2 enter the environmental cues and general activity steps. The illustration of FORM 4 shows how Bob's teacher entered this information.

ILLUSTRATION OF
FORM 4
BASELINE PROBE RECORD SHEET

STUDENT BOB

ACTIVITY Fast Food Restaurant

+ - NO ASSISTANCE
I - INDIRECT VERBAL
D - DIRECT VERBAL
G- GESTURE
M - MODEL
PP - PHYSICAL PRIME
FP - FULL PHYSICAL

ENVIRONMENTAL CUE	ACTIVITY STEP	DATE/SITE/TIME/TASK				
1.a. Door	1. Enter the restaurant					
2.a. Counter b. Cash register c. 'Order sign'	2. Approach counter					
3.a. Verbal request	3. Order					
4.a. Price b. Verbal prompt	4. Pay for order					
5.a. Change b. Line c. 'Pick-up here' sign	5. Move out of line and wait					
6.a. Cashier request b. Tray	6. Obtain order					
7.a. Table	7. Locate an empty table					
8.a. Seated at table b. Containers	8. Eat order					
9.a. Drink & food consumed b. Trash can	9. Clean dispose of trash					
10.a. Door b. Exit sign	10. Exit Restaurant					

STEP	EXPLANATION
2. Randomly assign tasks to probe trials/sessions and enter on FORM 4.	Assign tasks to probe trials on FORM 4. If possible present all of the tasks to the student. If this is not logistically feasible then select a subset of tasks that sample the range of difficulty of all of the tasks. The illustration of FORM 4 indicates that Bob's teacher assigned cola and fries to probe session 1, chocolate shake and cookie to probe session 2, and coffee and sundae to probe session 3.
Go to page 92. ACTIVITY 4.5: Conduct a Baseline probe.	

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ILLUSTRATION OF
FORM 4
BASELINE PROBE RECORD SHEET

STUDENT BOB

ACTIVITY Fast Food Restaurant

\+ - NO ASSISTANCE
I - INDIRECT VERBAL
D - DIRECT VERBAL
G- GESTURE

M - MODEL
PP - PHYSICAL PRIME
FP - FULL PHYSICAL

ENVIRONMENTAL CUE	ACTIVITY STEP	DATE/SITE/TIME/TASK			
		Coke & Fries	Shake & Cookie	Coffee & Sundae	
1.a. Door	1. Enter the restaurant				
2.a. Counter b. Cash register c. "Order sign"	2. Approach counter				
3.a. Verbal request	3. Order				
4.a. Price b. Verbal prompt	4. Pay for order				
5.a. Change b. Line c. "Pick-up here" sign	5. Move out of line and wait				
6.a. Cashier request b. Tray	6. Obtain order				
7.a. Table	7. Locate an empty table				
8.a. Seated at table b. Containers	8. Eat order				
9.a. Drink & food consumed b. Trash can	9. Clean dispose of trash				
10.a. Door b. Exit sign	10. Exit Restaurant				

ACTIVITY 4.5: Conduct Baseline probes.

Purpose: To determine how students will perform across the tasks included in the training site. The probe will allow you to identify the level of assistance that will be necessary to ensure correct responding during training, identify difficult steps that may require mass practice or simulation training, and to establish an estimate of how much time will be required to carry out training.

Materials: FORM 4 and all materials required by the student to complete the activity.

STEP	EXPLANATION
1. Enter date, and start and stop time on FORM 4.	List the date, the time the probe trial began, and the time that the probe trial ended on FORM 4. The "Time" should include the amount of time required to travel to and from the site. The illustration of FORM 4 shows how Bob's teacher entered this information. For example, the first probe trial was conducted at McDonald's on February 22. The probe trial was started at 1:00 pm and was ended at 1:25 pm.
2. Provide all materials and initial prompt to student.	Begin each probe trial by providing the student with all of the materials necessary to complete the activity and a prompt. For example, on the first probe trial Bob's teacher took him to McDonald's. When they arrived he gave him the order cards for a cola and fries and a $5.00 bill and said "Bob, go buy a cola and fries".

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ILLUSTRATION OF
FORM 4
BASELINE PROBE RECORD SHEET

STUDENT BOB

ACTIVITY Fast Food Restaurant

+ - NO ASSISTANCE
I - INDIRECT VERBAL
D - DIRECT VERBAL
G- GESTURE

M - MODEL
PP - PHYSICAL PRIME
FP - FULL PHYSICAL

ENVIRONMENTAL CUE	ACTIVITY STEP	DATE/SITE/TIME/TASK				
		2/22	2/23	2/24		
		McDlds	McDlds	McDlds		
		1:00 - 1:25	1:15 - 1:50	2:30 - 3:00		
		Coke & Fries	Shake & Cookie	Coffee & Sundae		
1.a. Door	1. Enter the restaurant					
2.a. Counter b. Cash register c. "Order sign"	2. Approach counter					
3.a. Verbal request	3. Order					
4.a. Price b. Verbal prompt	4. Pay for order					
5.a. Change b. Line c. "Pick-up here" sign	5. Move out of line and wait					
6.a. Cashier request b. Tray	6. Obtain order					
7.a. Table	7. Locate an empty table					
8.a. Seated at table b. Containers	8. Eat order					
9.a. Drink & food consumed b. Trash can	9. Clean dispose of trash					
10.a. Door b. Exit sign	10. Exit Restaurant					

STEP	EXPLANATION
3. Use an increasing prompt hierarchy to provide assistance on error steps.	When the student makes an error on an activity step use increasing levels of assistance to prompt the correct response. The general sequence for providing prompts to the student should be an indirect verbal prompt, a direct verbal prompt or a gesture, a model, a physical prime, and full physical assistance. This procedure will allow you to identify the minimum amount of assistance necessary to achieve a correct response by the student on each step of the activity. For example, on the first probe trial Bob correctly entered the restaurant and approached the counter. However, when the cashier asked him for his order he did not respond. Bob's teacher then said "Bob what do you do?", but he still did not present his notebook to the cashier. Bob's teacher then said "Bob, show her your notebook.", but he still not respond. Finally, he said "Bob, show her your notebook" and he touched Bob's arm lightly to move it in to the correct position to allow the cashier to see the card.
4. Record the level of assistance provided to the student on error steps on FORM 4.	In this step you simply record the amount of assistance you provided to the student on each step of the activity. This is done on FORM 4 using the prompt code. There are 7 different possible codes including a "+" which means the student did the step without assistance, "I" indicates that the student performed the step with an indirect verbal prompt, "D" indicates that the student completed the step with a direct verbal prompt, a "G" indicates that the student completed the step with a gestural cue, a "M" indicates a model was provided to the student, a "PP" indicates that the teacher provided a physical prime to the student, and "FP" indicates that the student required full physical assistance to complete the activity. When prompts are combined then you should simply record all of the prompts provided to the student. The illustration of FORM 4 shows the prompts that Bob's teacher provided to him on each step of the activity during each probe trial.
Go to page 96. ACTIVITY 4.6: Summarize Baseline data.	

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ILLUSTRATION OF
FORM 4
BASELINE PROBE RECORD SHEET

STUDENT BOB

ACTIVITY Fast Food Restaurant

+ - NO ASSISTANCE
I - INDIRECT VERBAL
D - DIRECT VERBAL
G- GESTURE

M - MODEL
PP - PHYSICAL PRIME
FP - FULL PHYSICAL

ENVIRONMENTAL CUE	ACTIVITY STEP	DATE/SITE/TIME/TASK				
		2/22	2/23	2/24		
		McDlds	McDlds	McDlds		
		1:00 - 1:25	1:15 - 1:50	2:20 - 3:00		
		Coke & Fries	Shake & Cookie	Coffee & Sundae		
1.a. Door	1. Enter the restaurant	+	+	+		
2.a. Counter b. Cash register c. "Order sign"	2. Approach counter	+	D+G	D+G		
3.a. Verbal request	3. Order	+	D+PP	D+PP		
4.a. Price b. Verbal prompt	4. Pay for order	D+PP	D+PP	D+PP		
5.a. Change b. Line c. "Pick-up here" sign	5. Move out of line and wait	D	D	D+G		
6.a. Cashier request b. Tray	6. Obtain order	D	D	D		
7.a. Table	7. Locate an empty table	+	+	+		
8.a. Seated at table b. Containers	8. Eat order	+	+	+		
9.a. Drink & food consumed b. Trash can	9. Clean dispose of trash	D	D+G	D		
10.a. Door b. Exit sign	10 Exit Restaurant	+	+	+		

ACTIVITY 4.6: Summarize Baseline data.

Purpose: This activity is focused on (a) identifying the level of assistance necessary to ensure a correct response by the student across all training tasks, (b) identify steps of the activity that are extremely difficult for the student to complete, and (c) establishing an estimate of how much time will need to be scheduled for training.

Materials: FORM 4 and FORM 5.

STEP	EXPLANATION
1. Identify the level of assistance necessary to ensure a correct response on each activity step and enter on FORM 5.	Examine FORM 4 to identify the maximum amount of assistance provided to the student on each activity step across all of the tasks. This prompt will be used later to develop a response prompting and fading procedure for training. Enter this prompt next to the appropriate activity step on FORM 5. The illustration FORM 5 shows the level of assistance that Bob's teacher identified for each step of the activity. For example, Bob's teacher determined that Bob would require a direct verbal plus a gestural cue for the step of "Approach the counter", a direct verbal prompt plus a physical prime for the steps of "Order" and "Pay for order", a direct verbal plus a gestural prompt on the step of "Move out of line and wait", a direct verbal for "Obtain order", and direct verbal and gestural prompts for the step "Clean table and dispose of trash and tray". Bob would not require prompts on the steps of "Enter the restaurant", "Locate an empty table", "Eat order", and "Exit".

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ILLUSTRATION OF
FORM 5
BASELINE SUMMARY SHEET

STUDENT Bob   Activity Fast Food Restaurant

ESTIMATED TRAINING TIME ____

ENVIRONMENTAL CUE	ACTIVITY STEP	PROMPT LEVEL	DIFFICULT STEP (✓)
1.a. Door	1. Enter the restaurant	None	
2.a. Counter b. Cash register c. "Order size"	2. Approach counter	Direct verbal plus a gesture.	
3.a. Verbal request	3. Order	Direct verbal plus a physical prime	
4.a. Price b. Verbal request	4. Pay for order	Direct verbal plus a physical prime	
5.a. Change b. Line c. Pick-up sign	5. Move out of line and wait	Direct verbal plus a gesture	
6.a. Cashier request b. Tray	6. Obtain order	Direct Verbal	
7.a. Table	7. Locate empty table	None	
8.a. Seated at table b. Containers	8. Eat order	None	
9.a. Drink & food consumed b. trash can	9. Clean table and dispose of trash	Direct verbal plus a gesture	
10.a. Door b. Exit sign	10. Exit restaurant	None	

STEP	EXPLANATION
2. Identify difficult steps and check on FORM 5.	Based on the data entered on FORM 5 and your observation of the student's performance during probe sessions, identify steps of the activity that the student will not master quickly in the actual training site. These usually include those steps on which the student will need to have "extra" practice on in order learn the correct response. Enter a check beside these difficult steps on FORM 5. The illustration of FORM 5 indicates the steps that Bob's teacher identified as "difficult" were "Order" and "Pay for order". These steps were selected because (a) Bob required a significant amount of assistance across all of the tasks and (b) Bob would only be provided 2 trials per session on these steps in the actual training site.

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ILLUSTRATION OF
FORM 5
BASELINE SUMMARY SHEET

STUDENT Bob ____________ Activity Fast Food Restaurant ____________

ESTIMATED TRAINING TIME______

ENVIRONMENTAL CUE	ACTIVITY STEP	PROMPT LEVEL	DIFFICULT STEP (✓)
1.a. Door	1. Enter the restaurant	None	
2.a. Counter b. Cash register c. "Order size"	2. Approach counter	Direct verbal plus a gesture.	
3.a. Verbal request	3. Order	Direct verbal plus a physical prime	✓
4.a. Price b. Verbal request	4. Pay for order	Direct verbal plus a physical prime	✓
5.a. Change b. Line c. Pick-up sign	5. Move out of line and wait	Direct verbal plus a gesture	
6.a. Cashier request b. Tray	6. Obtain order	Direct Verbal	
7.a. Table	7. Locate empty table	None	
8.a. Seated at table b. Containers	8. Eat order	None	
9.a. Drink & food consumed b. trash can	9. Clean table and dispose of trash	Direct verbal plus a gesture	
10.a. Door b. Exit sign	10. Exit restaurant	None	

STEP	EXPLANATION
3. Establish the expected time for training and enter on FORM 5.	Calculate the estimated time required to carry out training. This is done by adding the total time required to complete each probe trial and dividing by the total number of probe trials presented to the student. Enter the average on FORM 5. The illustration of FORM 5 indicates that the estimated time to conduct training was 33 minutes. The probe trials were 35 minutes, 25 minutes, and 40 minutes in length. Bob's teacher added the times of the three trials (25 + 35 + 40 = 100) and divided the sum by the total number of trials (100 ÷ 3 = 33). Recall that training time includes travel to and from the training site.
Go to page 103. Component 5.0: Select a Chaining Strategy	

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ILLUSTRATION OF
FORM 5
BASELINE SUMMARY SHEET

STUDENT Bob   Activity Fast Food Restaurant

ESTIMATED TRAINING TIME 33min

ENVIRONMENTAL CUE	ACTIVITY STEP	PROMPT LEVEL	DIFFICULT STEP (✓)
1.a. Door	1. Enter the restaurant	None	
2.a. Counter b. Cash register c. "Order size"	2. Approach counter	Direct verbal plus a gesture.	
3.a. Verbal request	3. Order	Direct verbal plus a physical prime	✓
4.a. Price b. Verbal request	4. Pay for order	Direct verbal plus a physical prime	✓
5.a. Change b. Line c. Pick-up sign	5. Move out of line and wait	Direct verbal plus a gesture	
6.a. Cashier request b. Tray	6. Obtain order	Direct Verbal	
7.a. Table	7. Locate empty table	None	
8.a. Seated at table b. Containers	8. Eat order	None	
9.a. Drink & food consumed b. trash can	9. Clean table and dispose of trash	Direct verbal plus a gesture	
10.a. Door b. Exit sign	10. Exit restaurant	None	

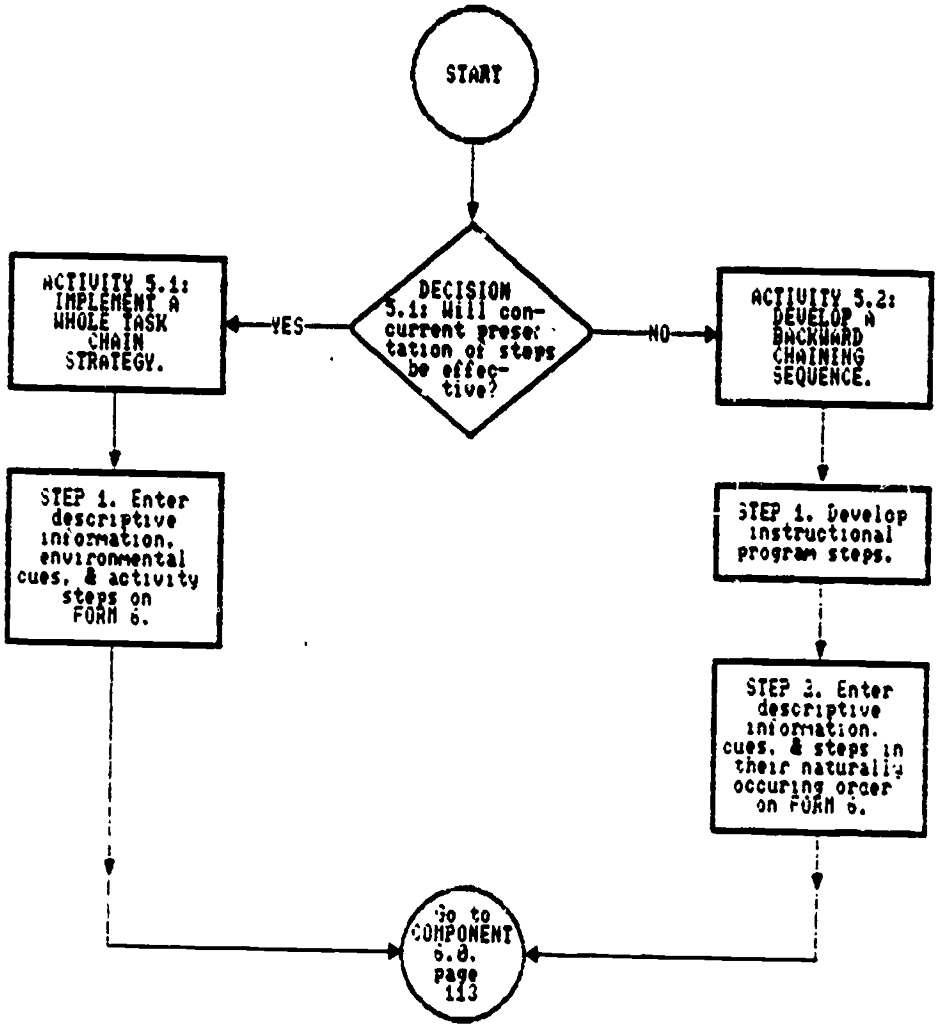
COMPONENT 5.0: SELECT A CHAINING STRATEGY

Component 5.0 outlines the decisions and activities necessary to select a chaining strategy for introducing the steps of the activity to the student. Research has suggested that one of two strategies are effective for training community activities. These are whole task, or concurrent chaining, and backward chaining.

Figure 6 presents the sequence of decisions that teachers must make in determining whether a whole task or backward chaining strategy is the most appropriate for the student and the activities necessary to develop the sequence for instruction.

Figure 6

COMPONENT 5.0: SELECT A CHAINING STRATEGY



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DECISION 5.1

DECISION	ACTION
Decision 5.1: Will simultaneous presentation of all activity steps be effective with the student?	YES. Go To Activity 5.1, page 106. NO. Go To Activity 5.2, page 108.

EXPLANATION: A primary consideration in selecting a chaining strategy is whether the student will be able to "handle" a simultaneous presentation of all of the steps of an activity. Most students with severe handicaps will have very little problem with the presentation of all of the activity steps during a single instructional session. If students can "handle" the simultaneous presentation of activity steps, then you should use a whole task chaining strategy. However, if a student has had difficulty learning community activities using whole task chaining strategies in the past, or if the student requires significant amounts of assistance to complete the *majority* of the steps in an activity, then it is recommended that you use a backward chaining strategy.

ACTIVITY 5.1: Implement a whole task chain strategy.

Purpose: Present all of the steps of an activity to the student in each instructional trial. The whole task chaining strategy will allow students to master the steps of an activity at their own rate and will increase the overall efficiency of training.

Materials: FORM 6.

STEP	EXPLANATION
1. Enter descriptive information, environmental cues, and activity steps on FORM 6. Go to page 113. Component 6.0: Select Assistance Strategies and Correction Procedures	In the whole task chaining strategy the student is presented with all of the steps of an activity during each instructional session. As such, there is no need to develop program steps to control the introduction of the steps of the activity to the student.

ILLUSTRATION OF
FORM 6
COMMUNITY TRAINING DATA FORM

STUDENT BOB ACTIVITY Using Fast Food Restaurants

CHAINING STRATEGY: Whole task CORRECTION PROCEDURE: See training prompts

CUE	ACTIVITY STEP	TRAINER'S PROMPT	STUDENT/DATE/SITE & TASK STEP/CHAIN STEP	COMMENTS
1.a. Door	1. Enter the restaurant			
2.a. Counter b. Cash register c. Order sign	2. Approach counter			
3.a. Verbal request	3. Order			
4.a. Price b. Verbal request	4. Pay for order			
5.a. Change b. Line c. Pick-up sign	5. Move out of line and wait			
6.a. Cashier request b. Tray	6. Obtain order			
7.a. Table	7. Locate an empty table			
8.a. Seated at table b. Containers	8. Eat order			
9.a. Drink and food containers b. Trash can	9. Clean table & dispose of trash			
10.a. Door b. Exit sign	10. Exit restaurant			

ACTIVITY 5.2: Develop a backward chaining sequence.

Purpose. The backward chaining strategy allows the teacher to control the introduction of the steps of an activity in order to prevent the "overloading" of the student during training. The backward chaining strategy is structured so that the steps are introduced to the student one at time from the end the activity to the beginning. In addition to controlling the introduction of the number of steps introduced to the student, the backward chaining strategy allows the teacher to immediately reinforce the student for correctly completing steps of the activity by using the natural reinforcers available for task completion often associated with community-based activities (i.e., drinking a shake and eating a cookie).

Materials: FORM 6.

STEP	EXPLANATION
1. Develop instructional program steps.	Develop a series of steps that will introduce the steps of the activity one at a time to the student beginning with the last step and moving sequentially to the first step. These program steps will identify the step(s) of the activity on which the teacher will provided training during each instructional session. This table will be inserted into the student's program packet. The illustration presents the program steps Bob's teacher developed to introduce the steps of the fast food activity. Each step describes what the *student* must do during a trial and what the *teacher* must do during the trial.

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ILLUSTRATION OF A BACKWARD CHAINING SEQUENCE FOR FAST FOOD RESTAURANTS

CHAIN STEP	ACTION
1.	The teacher assists with steps 1 through 9, the student performs steps 10.
2.	The teacher assists with steps 1 through 8, the student performs steps 9-10.
3.	The teacher assists with steps 1 through 7, the student performs steps 8-10.
4.	The teacher assists with steps 1 through 6, the student performs steps 7-10.
5.	The teacher assists with steps 1 through 5, the student performs steps 6-10.
6.	The teacher assists with steps 1 through 4, the student performs steps 5-10.
7.	The teacher assists with steps 1 through 3, the student performs steps 4-10.
8.	The teacher assists with steps 1 and 2, the student performs steps 3-10.
9.	The teacher assists with step 1, the student performs steps 2-10.
10.	The student performs all steps.

Activity 5.2 cont

STEP	EXPLANATION
2. Enter descriptive information, environmental cues, and activity steps in their naturally occurring order on FORM 6. Go to page 113. Component 6.0: Select Assistance Strategies and Correction Procedures	The illustration shows how Bob's teacher entered this information on FORM 6. Note that "Backward Chaining" is recorded as the chaining strategy.

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ILLUSTRATION OF
FORM 6
COMMUNITY TRAINING DATA FORM

STUDENT **BOB** ____________________ ACTIVITY **Using Fast Food Restaurants**

CHAINING STRATEGY: **Backward Chaining** CORRECTION PROCEDURE: ____________________

CUE	ACTIVITY STEP	TRAINER'S PROMPT	STUDENT/DATE/SITE & TASK STEP/CHAIN STEP	COMMENTS
1.a. Door	1. Enter the restaurant			
2.a. Counter b. Cash register c. Order sign	2. Approach counter			
3.a. Verbal request	3. Order			
4.a. Price b. Verbal request	4. Pay for order			
5.a. Change b. Line c. Pick-up sign	5. Move out of line and wait			
6.a. Cashier request b. Tray	6. Obtain order			
7.a. Table	7. Locate an empty table			
8.a. Seated at table b. Containers	8. Eat order			
9.a. Drink and food containers b. Trash can	9. Clean table & dispose of trash			
10.a. Door b. Exit sign	10. Exit restaurant			

COMPONENT 6.0: SELECT ASSISTANCE STRATEGIES AND DEVELOP CORRECTION PROCEDURES

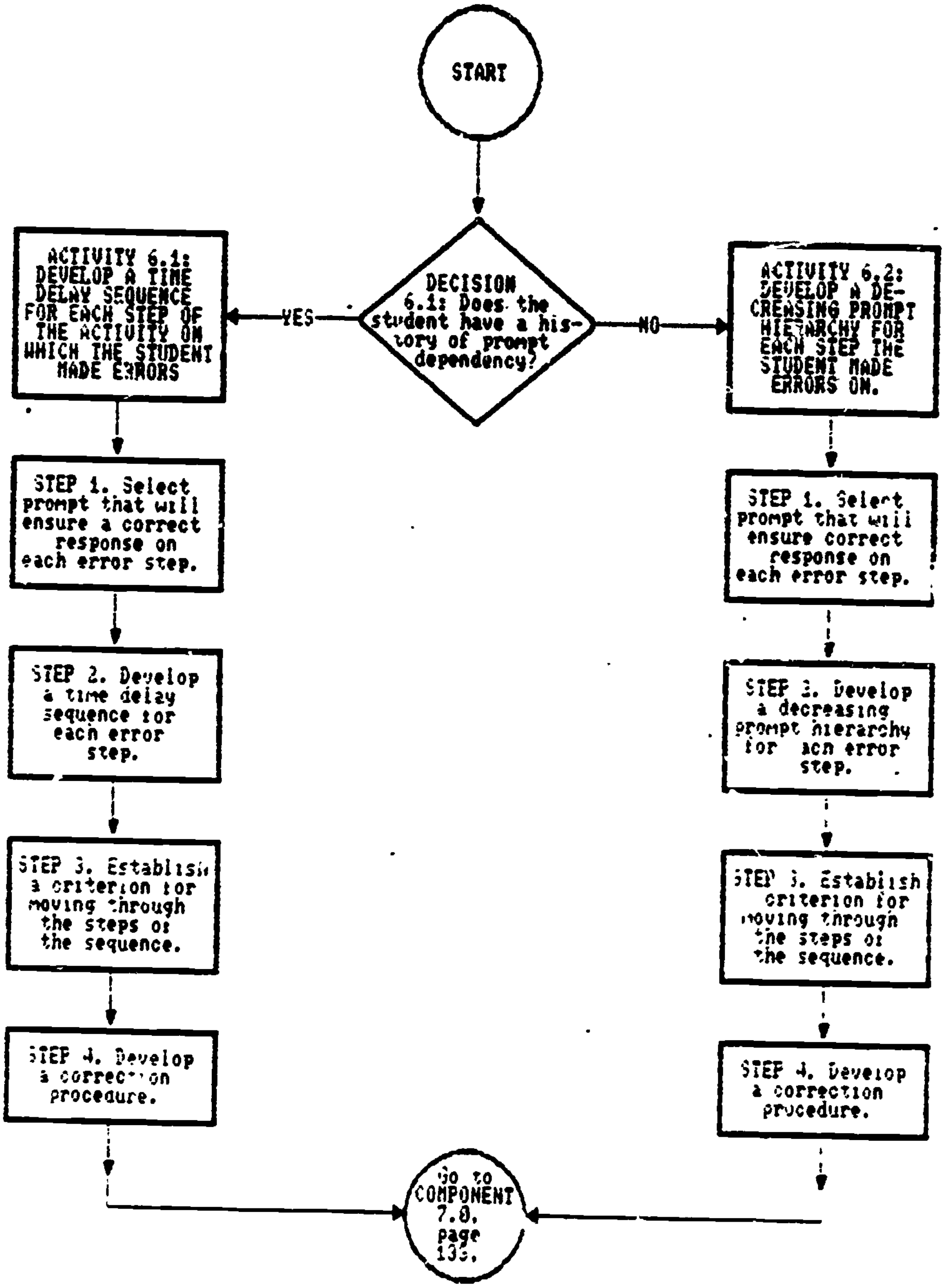
Component 6.0 outlines the principle decisions and activities required to select appropriate assistance strategies for training students in community settings. There are three general assistance strategies available to the teacher in carrying out training. These include an increasing prompt hierarchy, a decreasing prompt hierarchy, and time delay. The time delay and decreasing prompt hierarchy are designed to *prevent* the student from making errors during training. In contrast, the increasing prompt hierarchy is designed to allow the student to make errors and to correct those errors by providing increasing amounts of assistance to the student until they perform correctly.

Research has shown that if the student has not mastered an activity the teacher should use either a decreasing prompt hierarchy or time delay procedure. The increasing prompt hierarchy should be used if the student can perform the activity reliably most the of the time or if the student requires only minimal assistance to complete the steps of the activity.

Figure 7 shows the principle decisions and activities required in selecting and developing effective assistance strategies for students.

Figure 7

COMPONENT 6.0: SELECT ASSISTANCE STRATEGIES AND DEVELOP CORRECTION PROCEDURES



DECISION 6.1

DECISION	ACTION
Decision 6.1: Does the student have a history of prompt dependency?	YES. Go To Activity 6.1, page 116. NO. Go To Activity 6.2, page 124.

EXPLANATION: If you, or other teachers, have had difficulty fading assistance with the student in the past it is recommended that you utilize a time delay procedure for training. The time delay procedure is structured to reinforce the student's self-initiation of responses. If, however, the student has no history of prompt dependency it recommended that you use a decreasing prompt hierarchy for training.

ACTIVITY 6.1: Develop a time delay sequence for each step of the activity on which the student made errors during Baseline.

Purpose: To develop a response prompting and fading sequence for error steps of the activity. In the time delay procedure the *amount* of assistance you provide to the student does not change across instructional trials or sessions. Prompts are faded by systematically increasing the time between the presentation of the environmental cue for each activity step and your prompt. Generally, it is most effective to increase the "delay" periods in 1 second increments.

Materials: FORM 5.

STEP	EXPLANATION
1. Select the prompt that will ensure a correct response on each error step.	Identify the *specific* prompts that will allow the student to complete each error step correctly on the first attempt. This information is available from the summary of the Baseline probe on FORM 5. The illustration of FORM 5 shows the specific prompts that Bob's teacher had to provide to ensure correct responding on each error step.

ILLUSTRATION OF
FORM 5
BASELINE SUMMARY SHEET

STUDENT Bob   Activity Fast Food Restaurant

ESTIMATED TRAINING TIME 33 minutes

ENVIRONMENTAL CUE	ACTIVITY STEP	PROMPT LEVEL	DIFFICULT STEP(✓)
1.a. Door	1. Enter the restaurant	None	
2.a. Counter b. Cash register c. "Order size"	2. Approach counter	Direct verbal plus a gesture.	
3.a. Verbal request	3. Order	Direct verbal a physical prime	✓
4.a. Price b. Verbal request	4. Pay for order	Direct verbal plus a physical prime	✓
5.a. Change b. Line c. Pick-up sign	5. Move out of line and wait	Direct verbal plus a gesture	
6.a. Cashier request b. Tray	6. Obtain order	Direct Verbal	
7.a. Table	7. Locate empty table	None	
8.a. Seated at table b. Containers	8. Eat order	None	
9.a. Drink & food consumed b. trash can	9. Clean table and dispose of trash	Direct verbal plus a gesture	
10.a. Door b. Exit sign	10. Exit restaurant	None	

STEP	EXPLANATION
2. Develop a time delay sequence for each error step.	Develop a series of steps which increases the period of time that your prompt will be delayed. The steps should be structured to increase the delay period by 1 second increments. The sequence should begin with a "no delay" step. The last step of the sequence should be at least 1 second beyond the period that you think is reasonable for the student to initiate the step. The illustration shows the time delay sequences that Bob's teacher developed for the step of "Approaching the counter". Bob had required a direct verbal prompt (i.e., "Go to the register/end of the line") and a gesture (i.e., pointing to the area) during the baseline probe. This will serve as the prompt for this step throughout training. No attempt will be made to reduce the level of this prompt. In addition, Bob's teacher felt that Bob should initiate this step within 3 seconds after entering the restaurant. The sequence starts with "no delay" in which Bob's teacher will provide the prompt immediately after Bob enters the restaurant. Once Bob approaches the counter reliably with the prompt presented immediately, his teacher will delay the prompt 1 second. When Bob enters the restaurant his teacher will count to himself "one thousand one", if Bob initiates the response within 1 second and goes to the correct area his teacher will reinforce him (e.g., Good, you remembered to go to the register"). If however, he did not approach the counter his teacher would provide the designated prompt. Once Bob consistently correctly initiates the step within the 1 second delay, his teacher will increase the delay to 2 seconds. This process will continue until the teacher had moved through all of the steps in the sequence. Develop a delay sequence for each step of the activity on which an error occurred during baseline. Use the prompt from Form 5, that ensures correct responding for each step.

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ILLUSTRATION OF A TIME DELAY SEQUENCE

STEP	PROMPT	DELAY SEQUENCE
Approach counter.	"Go to the register/ end of the line" and point to area.	1. No delay 2. 1 second delay 3. 2 second delay 4. 3 second delay 5. 4 second delay

ACTIVITY 6.1

STEP	EXPLANATION
3. Establish a criterion for moving through the steps of the sequence.	Although you established a criterion for assessing when the student has mastered specific sites and tasks in Component 3.0: Sequence sites and Tasks for Training, you need to also establish a criterion for moving through the steps of the time delay sequence. The criterion must be structured to demonstrate that the student can reliably perform at each step in the sequence but should not "over-train" on any single step. In the illustration, training would begin with the prompt being provided immediately after Bob entered the restaurant. When Bob approached the counter correctly with the prompt being provided immediately on 5 consecutive trials the teacher would move to the 1 second delay step. When Bob initiated approaching the counter within 1 second and went to the correct location on 5 consecutive trials his teacher would move to the 2 second delay step. This process would continue until Bob correctly approached the counter on the 4 second delay step on 5 consecutive sessions. It is recommended that you occasionally test to see if students can complete the step at the last delay level. This will prevent redundant teaching at subsequent levels of the fading sequence.

ILLUSTRATION OF A TIME DELAY SEQUENCE

STEP	PROMPT	DELAY SEQUENCE
Approach counter.	"Go to the register/ end of the line" and point to area.	1. No delay
		2. 1 second delay
		3. 2 second delay
		4. 3 second delay
		5. 4 second delay

STEP	EXPLANATION
4. Develop a correction procedure.	While the time delay procedure is designed to prevent errors during training sometimes errors can not be avoided. You need to develop a procedure for effectively and efficiently correcting student errors. The correction procedure should be structured to require the *student* to complete the correct response. It is recommended that the correction procedure contain three basic elements. These are (1) providing immediate feedback to the student that an error has occurred, (2) requiring the student to re-initiate and complete the step, and (3) providing the level of assistance necessary to ensure that the student completes the step correctly. In a time delay procedure, these elements could be implemented by (1) saying "No" as soon as the student makes an error, (2) backing up to the previous step in chain, and (3) providing the designated prompt for the step. The illustration shows how this procedure would be implemented with Bob on "Approaching the counter".
Go to page 133. Component 7.0: Organize Data Collection System and Program File.	

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ILLUSTRATION OF A CORRECTION PROCEDURE FOR A BACKWARD CHAINING STRATEGY

STEP	PROMPT	STUDENT RESPONSE
Approach counter.	2 second delay step	Bob moves toward line but does not go to the end.

CORRECTION PROCEDURE

Step 1. The teacher provides immediate feedback. "No Bob. You need to go to the end of the line"

Step 2. The teacher backs up to the previous step in the chain. Bob's teacher returns him to the door.

Step 3. Teacher provides the designated prompt for the step. "Go to the end of the line" and point to the correct location.

ACTIVITY 6.2: Develop a decreasing prompt hierarchy sequence for each step of the activity on which the student made errors during Baseline.

Purpose: To develop a response prompting and fading sequence for each error step in the activity. The decreasing prompt hierarchy is structured to reduce the *amount* of assistance provided to the student across instructional trials or sessions. The general sequence for decreasing the level of assistance is full physical assistance, physical primes, gestural, verbal directions, and indirect verbal directions.

Materials: FORM 5.

STEP	EXPLANATION
1. Select the prompt that will ensure a correct response on each error step.	Identify the prompt that will be required by the student to correctly perform each error step. These prompts are identified for each step on FORM 5. The illustration of FORM 5 shows the prompts required by Bob on each error step during the Baseline probe. For example, his teacher had to provide a direct verbal prompt (i.e, "Go to the register/end of the line") plus a gestural prompt (i.e., pointing) to ensure that he would correctly approach the counter.

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ILLUSTRATION OF
FORM 5
BASELINE SUMMARY SHEET

STUDENT Bob Activity Fast Food Restaurant

ESTIMATED TRAINING TIME 33 minutes

ENVIRONMENTAL CUE	ACTIVITY STEP	PROMPT LEVEL	DIFFICULT STEP(✓)
1.a. Door	1. Enter the restaurant	None	
2.a. Counter b. Cash register c. "Order size"	2. Approach counter	Direct verbal plus a gesture.	
3.a. Verbal request	3. Order	Direct verbal a physical prime	✓
4.a. Price b. Verbal request	4. Pay for order	Direct verbal plus a physical prime	✓
5.a. Change b. Line c. Pick-up sign	5. Move out of line and wait	Direct verbal plus a gesture	
6.a. Cashier request b. Tray	6. Obtain order	Direct Verbal	
7.a. Table	7. Locate empty table	None	
8.a. Seated at table b. Containers	8. Eat order	None	
9.a. Drink & food consumed b. trash can	9. Clean table and dispose of trash	Direct verbal plus a gesture	
10.a. Door b. Exit sign	10. Exit restaurant	None	

STEP	EXPLANATION
2. Develop a decreasing prompt hierarchy for each error step.	Using the prompts from FORM 5 as the starting point, you should develop a series of steps that will reduce the *amount* of assistance that you provide to the student across instructional trials. The sequence should generally move toward indirect verbal prompts as the last step in the sequence. It is recommended that you pair verbal prompts with full physical assistance, physical primes, and gestures. These "prompt blends" are easily faded because to reduce the amount of assistance to the student you simply drop one of the prompts. Using these guidelines develop a sequence of the *specific* prompts you will provide on each activity step. The illustration shows how Bob's teacher developed a sequence of prompts for the error step of "Approaching the counter". During the Baseline probe, Bob required a direct verbal prompt (i.e., "Go to the register/end of the line" plus a gesture (i.e., pointing to the correct area) to complete the step correctly. Bob's teacher developed a 3 step sequence that started with these prompts and moved to an indirect verbal prompt (i.e., "Okay, get ready to order").

ILLUSTRATION OF A DECREASING PROMPT HIERARCHY SEQUENCE

STEP	PROMPT
Approach the counter.	1. "Go to the register/end of the line" and point to correct location.
	2. "Go to the register/end of the line."
	3. "Okay, get ready to order".

STEP	EXPLANATION
3. Establish a criterion for moving through the steps of the sequence.	Although you established a criterion for assessing when the student has mastered specific sites and tasks in Component 3.0: Sequence Sites and Tasks for Training, you also need to establish a criterion for moving through the steps of the decreasing prompt hierarchy sequence. The criterion must be structured to demonstrate that the student can reliably perform at each step in the sequence but should not "overtrain" at any single step. While there is not one "best" criterion for moving through decreasing prompt hierarchy sequences, the recommended criterion is "correct performance on 5 consecutive trials". Correct performance means that the student completes the step *correctly* with the amount assistance the teacher provides, not that they perform the step independently. The number of correct trials required may need to be decreased or increased for some students depending how rapidly they learn. In the illustration above, as soon as Bob entered the restaurant his teacher would say "Go to the register/end of the line" and point to the correct area. When Bob correctly approached the counter with these prompts on 5 consecutive trials his teacher would move to step 2 in the sequence. In this step, when Bob entered the restaurant he would say "Go to the register/end of the line". When Bob approached the counter correctly with this prompt on 5 consecutive trials his teacher would move to step 3 of the sequence. Training on step 3 would continue until Bob could approach the counter with this prompt on 5 consecutive trials. At this point, Bob would be expected to complete the step without any assistance. It is recommended that you occasionally test to see if students can complete the step without assistance. This will prevent redundant teaching at subsequent steps of the sequence.

ILLUSTRATION OF A DECREASING PROMPT HIERARCHY SEQUENCE

<u>STEP</u>	<u>PROMPT</u>
Approach the counter.	1. "Go to the register/end of the line" and point to correct location.
	2. "Go to the register/end of the line."
	3. "Okay, get ready to order".

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STEP	EXPLANATION
4. Develop a correction procedure. Go to page 133. Component 7.0: Organize Data Collection System and Program File.	While the decreasing prompt hierarchy is designed to prevent errors during training, sometimes errors are unavoidable. You need to develop a procedure for effectively and efficiently correcting student errors. The correction procedure should be structured to require the *student* to complete the correct response before moving on in the chain. It is recommended that the correction procedure contain three elements. These are (1) providing immediate feedback to the student that an error has occurred, (2) requiring the student to correctly complete the step, and (3) providing the level of assistance necessary to ensure that the student completes the step correctly. In a decreasing prompt hierarchy, these three components can be included by (1) saying "No" as soon as the student makes an error, (2) backing up to the previous step in chain, and (3) requiring the student to complete the step while providing the prompt designated in the first step of the hierarchy. The illustration shows how this procedure would be implemented with Bob on "Approaching the counter".

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ILLUSTRATION OF A CORRECTION PROCEDURE FOR A BACKWARD CHAINING STRATEGY

STEP	PROMPT	STUDENT RESPONSE
Approach counter.	"Okay, get ready to order."	Bob does not get in line.

CORRECTION PROCEDURE

Step 1. The teacher provides immediate feedback. "No Bob. You need to go to the end of the line"

Step 2. The teacher backs up to the previous step in the chain. Bob is returned to the door.

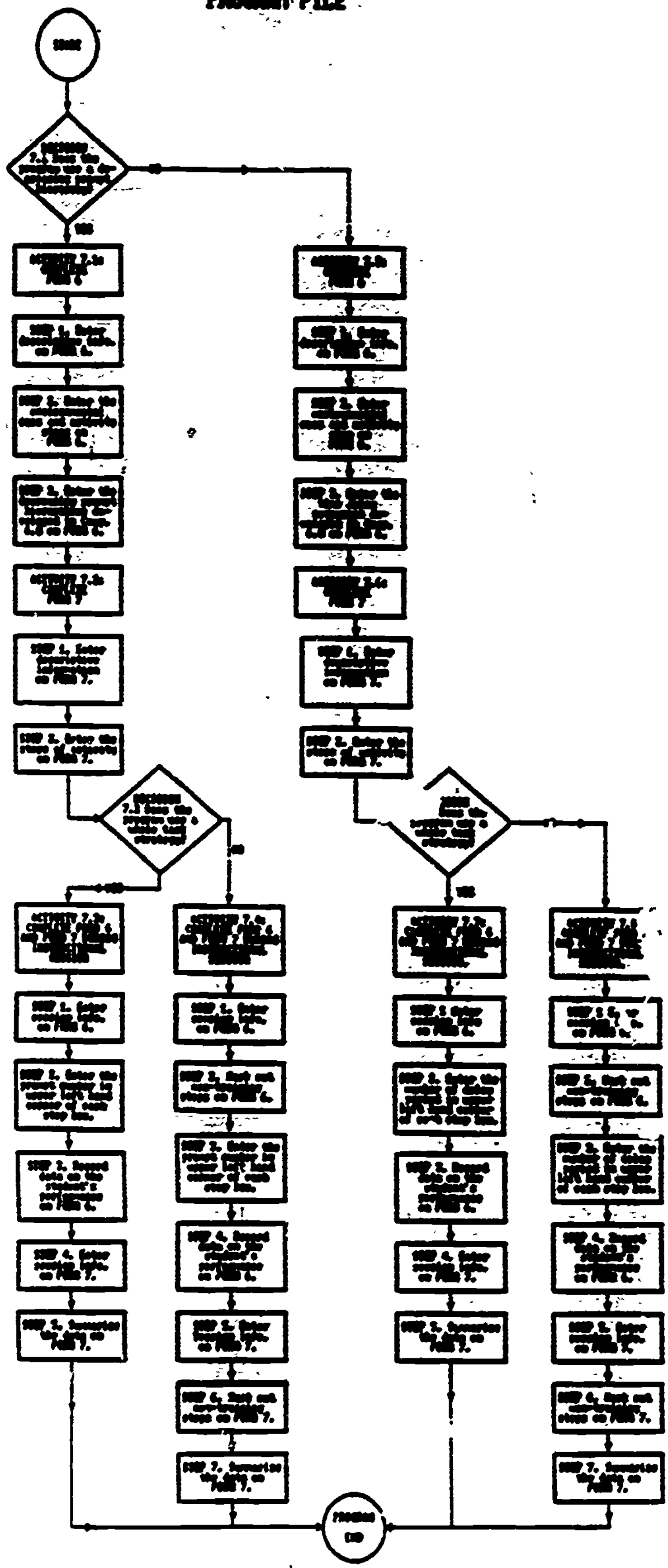
Step 3. Teacher provides the first prompt in the sequence for that step. "Go to the end of the line" and point to the correct location.

COMPONENT 7.0:
ORGANIZE DATA COLLECTION SYSTEM AND PROGRAM FILE

Component 7.0 describes the decisions and activities necessary to organize the data collection system and program file for instruction. This file will provide direction on the specific sites and tasks presented to the student during each instructional session and the specific cues and corrections provided to the student on each step of the activity.

Figure 8 presents the sequence of decisions and activities necessary for you to complete Component 7.0.

Figure 8
COMPONENT 7.0: ORGANIZE DATA COLLECTION SYSTEM AND PROGRAM FILE



DECISION 7.1

DECISION	ACTION
Decision 7.1: Does the program use a decreasing prompt hierarchy?	YES. Go To Activity 7.1, page 136. NO. Go To Activity 7.5, page 158.

EXPLANATION: The way in which you organize the data collection system will vary with the assistance strategy you have selected for the student.

ACTIVITY 7.1: Complete FORM 6.

Purpose: To develop a method of tracking student performance through instructional steps.

Materials: FORM 1or 2, and FORM 6.

STEP	EXPLANATION
1. Enter descriptive information on FORM 6.	Enter the student's name and the activity on the appropriate line. In addition, enter the correction procedure on the appropriate lines.
2. Enter the environmental cues and activity steps on FORM 6.	Using FORM 1 or FORM 2 as a guide, enter environmental cues and activity steps on FORM 6. The illustration of FORM 6 shows how Bob's teacher completed steps 1 and 2 for using fast food restaurants.

ILLUSTRATION OF
FORM 6
COMMUNITY TRAINING DATA FORM

STUDENT Bob

ACTIVITY Using Fast Food Restaurants

CHAINING STRATEGY: ________

CORRECTION PROCEDURE: 1. No, 2. Back up, 3 Provide assistance

CUE	ACTIVITY STEP	TRAINER'S PROMPT	STUDENT/DATE/SITE & TASK STEP/CHAIN STEP	Comments
1.a. Door	1. Enter the restaurant			
2.a. Counter b. Cash register c. Order sign	2. Approach counter			
3.a. Verbal request	3. Order			
4.a. Price b. Verbal request	4. Pay for order			
5.a. Change b. Line c. Pick-up sign	5. Move out of line and wait			
6.a. Cashier request b. Tray	6. Obtain order			
7.a. Table	7. Locate an empty table			
8.a. Seated at table b. Containers	8. Eat order			
9.a. Drink & food containers b. Trash can	9. Clean table & dispose of trash			
10.a. Door b. Exit sign	10. Exit restaurant			

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STEP	EXPLANATION
3. Enter the decreasing prompt hierarchies developed in Component 6.0 on FORM 6. Go to page 140. ACTIVITY 7.2 Complete FORM 7.	In Component 6.0 you developed decreasing prompt hierarchies for each step of the activity on which the student required assistance. Enter these hierarchies in the appropriate box on FORM 6. In the illustration of FORM 6, Bob's teacher entered the hierarchies for each step of the activity.

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ILLUSTRATION OF
FORM 6
COMMUNITY TRAINING DATA FORM

STUDENT Bob ACTIVITY Using Fast Food Restaurants

CHAINING STRATEGY: ____________ CORRECTION PROCEDURE: "No" Back up 2 steps and repeat step with assistance.

CUE	ACTIVITY STEP	TRAINER'S PROMPT	STUDENT/DATE/SITE & TASK STEP/CHAIN STEP Bob	Comments
1.a. Door	1. Enter the restaurant			
2.a. Counter b. Cash register c. Order sign	2. Approach counter	1. "Go to the register/ end of the line" and point. 2. "Go to the register/ end of line" 3. "Okay, what do you do"		
3.a. Verbal request	3. Order	1. "Show them your book & touch wrist 2."Show them your book" & touch elbow 3."Show them your book 4."Okay, what do you do"		
4.a. Price b. Verbal request	4. Pay for order	1 "Give them your money" & move wrist to pocket. 2. "Give them your money" & touch elbow 3."Give them your book" 4."Okay, what do you do"		
5 a. Change b. Line c. Pick-up sign	5. Move out of line and wait	1. "Move out of line." & point 2. "Move out of line." 3."Okay, what do you do		
6 a. Cashier request b. Tray	6. Obtain order	1. "Get your drink/food." 2. "Look."		
7.a. Table	7. Locate an empty table			
8.a. Seated at table b. Containers	8. Eat order			
9.a. Drink and food containers b. Trash can	9. Clean table & dispose of trash	1. "Put your trash in the can" & point to can. 2. "Put your trash in the can" 3. "Okay, now what."		
10.a. Door b. Exit sign	10. Exit restaurant			

ACTIVITY 7.2: Complete FORM 7

Purpose: FORM 7 is designed as on-going summary of the student performance in the activity. In contrast to the community training data form, FORM 7 allows you to track the students performance for up to 30 instructional sessions. This summary will provide the information necessary to revise the instructional program if the student does not master the activity.

Materials: FORM 6 and FORM 7.

STEP	EXPLANATION
1. Enter descriptive information on FORM 7.	Enter the student's name and the activity on the appropriate lines.
2. Enter the steps of the activity on FORM 7.	Transfer the steps of the activity listed on FORM 6 to FORM 7 in the appropriate column.
Go to page 143. DECISION 7.2: Does program use whole task strategy?	

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ILLUSTRATION OF
FORM 7
DATA SUMMARY FORM

STUDENT Bob   ACTIVITY Using Fast Food Restaurants

STEP	DATE/PROGRAM STEP																		
1. Enter the restaurant																			
2 Approach the counter																			
3. Order																			
4. Pay for Order																			
5. Move out of line and wait																			
6. Obtain order																			
7. Locate an empty table																			
8. Eat order																			
9. Clean table & dispose of trash																			
10. Exit																			

DECISION 7.2

DECISION	EXPLANATION
Decision 7.2: Does the program use a whole task strategy?	YES. Go To Activity 7.3, page 144. NO. Go To Activity 7.4, page 150.

EXPLANATION: The way that FORMS 6 and 7 are set up for instruction will vary depending on whether you have selected a whole task or backward chaining strategy. If you are using a whole task strategy then go to Activity 7.3. If you have selected a backward chaining strategy then go to Activity 7.4.

ACTIVITY 7.3: Complete FORM 6 and FORM 7 during each instructional session.

Purpose: To provide an on-going and up to date record of the student's performance during instruction.

Materials: FORM 3, FORM 6, and FORM 7.

STEP	EXPLANATION
1. Enter session information on FORM 6.	FORM 6 is designed to allow you to record the date of each instructional session and the step of the instructional sequence for introducing sites and tasks to the student from FORM 3. Since you are using a whole task chaining strategy there is no need to enter a step for the chaining sequence. The illustration of FORM 6 shows how Bob's teacher entered this information on FORM 6. In the top box he has entered the date, in the middle box he has entered the step of the instructional sequence, and the bottom box is left blank because he is using a whole task chaining strategy.
2. Enter the prompt number in upper left hand corner of each step box.	In this step you need to identify the prompt that you will provide to the student during the session. This is done by entering the number of the prompt that you will provide in the upper left hand corner of each step box. If no prompt will be provided, do not enter a number.

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ILLUSTRATION OF
FORM 6
COMMUNITY TRAINING DATA FORM

STUDENT Bob ACTIVITY Using Fast Food Restaurants

CHAINING STRATEGY: Whole task CORRECTION PROCEDURE: "No" Back up 2 steps and repeat step with assistance.

CUE	ACTIVITY STEP	TRAINER'S PROMPT	STUDENT/DATE/SITE & TASK STEP/CHAIN STEP Bob 2/29 1											Comments
1.a. Door	1. Enter the restaurant													
2.a. Counter b. Cash register c. Order sign	2. Approach counter	1. "Go to the register/ end of the line" and point. 2. "Go to the register/ end of line" 3. "Okay, what do you do"	1											
3.a. Verbal request	3. Order	1. "Show them your book & touch wrist 2."Show them your book & touch elbow 3."Show them your book" 4."Okay, what do you do"	1											
4.a. Price b. Verbal request	4. Pay for order	1 "Give them your money" & move wrist to pocket. 2. " Give them your money" & touch elbow 3."Give them your book" 4."Okay, what do you do"	1											
5.a. Change b. Line c. Pick-up sign	5. Move out of line and wait	1. " Move out of line." & point 2. "Move out of line." 3."Okay, what do you do"	1											
6.a. Cashier request b. Tray	6. Obtain order	1. "Get your drink/food." 2. "Look."	1											
7.a. Table	7. Locate an empty table													
8.a. Seated at table b. Containers	8. Eat order													
9.a. Drink and food containers b. Trash can	9. Clean table & dispose of trash	1. "Put your trash in the can." & point to can. 2. "Put your trash in the can" 3. "Okay, now what."	1											
10.a. Door b. Exit sign	10. Exit restaurant													

STEP	EXPLANATION
3. Record data on the student's performance on FORM 6.	There are three possible codes for the student's response on each step. If the student performs the step without assistance you should enter a "+". If the student performs the step with the designated prompt enter "✓". If the student does not complete the step correctly or if you need to provide additional assistance then enter a "-". The illustration of FORM 6 shows how this system is used.

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ILLUSTRATION OF
FORM 6
COMMUNITY TRAINING DATA FORM

STUDENT Bob ACTIVITY Using Fast Food Restaurants

CHAINING STRATEGY: Whole task CORRECTION PROCEDURE: "No" Back up 2 steps and repeat step with assistance.

CUE	ACTIVITY STEP	TRAINER'S PROMPT	STUDENT/DATE/SITE & TASK STEP/CHAIN STEP Bob 2/[illegible] 1										Comments
1.a. Door	1. Enter the restaurant		+										
2.a. Counter b. Cash register c. Order sign	2. Approach counter	1. "Go to the register/ end of the line" and point. 2. "Go to the register/ end of line" 3. "Okay, what do you do"	1 ✓										
3.a. Verbal request	3. Order	1. "Show them your book & touch wrist 2."Show them your book & touch elbow 3."Show them your book 4."Okay, what do you do	1 ✓										
4.a. Price b. Verbal request	4. Pay for order	1 "Give them your money" & move wrist to pocket. 2. " Give them your money" & touch elbow 3."Give them your book" 4."Okay, what do you do	1 ✓										
5.a. Change b. Line c. Pick-up sign	5. Move out of line and wait	1. " Move out of line." & point 2. "Move out of line." 3."Okay, what do you do	1 ✓										
6.a. Cashier request b. Tray	6. Obtain order	1. "Get your drink/food." Look."	1 ✓										
7.a. Table	7. Locate an empty table		+										
8.a. Seated at table b. Containers	8. Eat order		+										
9.a. Drink and food containers b. Trash can	9. Clean table & dispose of trash	1. "Put your trash in the can." & point to can. 2. "Put your trash in the can" 3. "Okay, now what."	1 ✓										
10.a. Door b. Exit sign	10. Exit restaurant		+										

STEP	EXPLANATION
4. Enter session information on FORM 7.	Enter the date of the session in the top box and enter the step number of the site/task sequence in the middle box, and leave the bottom box blank.
5. Summarize the data on FORM 7.	Following each session, summarize the data on FORM 7. This is done by "blackening in" the boxes in the session column of steps in which you recorded "+". The illustration of FORM 7 shows how Bob's teacher completed steps 4 and 5. On the step of "Enter the restaurant" Bob did not require a prompt so his teacher blackened in the box. On the step of "Approach the counter" his teacher provided a direct verbal prompt plus a gesture so he left this box blank in the session column.
Program Development Complete End	

ILLUSTRATION OF
FORM 7
DATA SUMMARY FORM

STUDENT Bob ACTIVITY Using Fast Food Restaurants

DATE/PROGRAM STEP

STEP	2/29															
	1															
1. Enter the restaurant																
2. Approach the counter																
3. Order																
4. Pay for order																
5. Move out of line and wait																
6. Obtain order																
7. Locate an empty table																
8. Eat order																
9. Clean table & dispose of trash																
10. Exit																

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ACTIVITY 7.4: Complete FORM 6 and FORM 7 during each instructional session.

Purpose: To provide an on-going and up to date record of the student's performance during instruction.

Materials: Chaining Sequence from Activity 5.2, FORM 3, FORM 6, and FORM 7.

STEP	EXPLANATION
1. Enter session information on FORM 6.	FORM 6 is designed to allow you to record the date of each instructional session, the step of the site/task sequence from FORM 3, and the step of the backward chaining. The illustration of FORM 6 shows how Bob's teacher entered this information. In the top box he has entered the date, in the middle box he has entered the step of the instructional sequence from FORM 3, and in the bottom box he entered the number of the step in the backward chaining sequence developed in Activity 5.2.

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ILLUSTRATION OF
FORM 6
COMMUNITY TRAINING DATA FORM

STUDENT Bob ACTIVITY Using Fast Food Restaurants

CHAINING STRATEGY: Backward Chaining CORRECTION PROCEDURE: "No" Back-up 2 steps and repeat step with assistance.

CUE	ACTIVITY STEP	TRAINER'S PROMPT	STUDENT/DATE/SITE & TASK STEP/CHAIN STEP L.a. 2/28 1 2											Comments
1.a. Door	1. Enter the restaurant													
2.a. Counter b. Cash register c. Order sign	2. Approach counter	1. "Go to the register/ end of the line" and point. 2. "Go to the register/ end of line" 3. "Okay, what do you do"												
3.a. Verbal request	3. Order	1. "Show them your book" & touch wrist 2. "Show them your book & touch elbow 3. "Show them your book" 4. "Okay, what do you do?												
4.a. Price b. Verbal request	4. Pay for order	1 "Give them your money" & move wrist to pocket. 2. " Give them your money" & touch elbow 3. "Give them your book" 4. "Okay, what do you do?												
5.a. Change b. Line c. Pick-up sign	5. Move out of line and wait	1. " Move out of line." & point 2. "Move out of line." 3. "Okay, what do you do?												
6.a. Cashier request b. Tray	6. Obtain order	1. "Get your drink/food." 2. "Look."												
7.a. Table	7. Locate an empty table													
8.a. Seated at table b. Containers	8. Eat order													
9.a. Drink and food containers b. Trash can	9. Clean table & dispose of trash	1. "Put your trash in the can." & point to can. 2. "Put your trash in the can" 3. "Okay, now what."												
10.a. Door b. Exit sign	10. Exit restaurant													

STEP	EXPLANATION
2. Mark out non-training steps on FORM 6.	In Activity 5.2 you developed a backwards chaining sequence. Using this as a guide mark out the steps of the activity that the student will not receive training. Simply place an "X" through the box in the session column for the steps that are not in training. In the illustration of FORM 6, Bob's teacher indicates how he completed this step for the session conducted on February 28, 1988. Since Bob completed the last step of the activity correctly during the Baseline probe, his teacher started instruction on step 2 of the backward chaining sequence. He simply placed an "X" through steps 1 through 8 and left the box blank for steps 9 and 10.
3. Enter the prompt number in the upper left hand corner of each step box.	In this step you need to identify the prompt that you will use for steps that are in training. This is done by entering the number of the prompt that you will provide in the upper left hand corner of each step box. If no prompt is to be provided leave the box blank.

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ILLUSTRATION OF
FORM 6
COMMUNITY TRAINING DATA FORM

STUDENT Bob ACTIVITY Using Fast Food Restaurants

CHAINING STRATEGY: Backward Chaining CORRECTION PROCEDURE: "No" Backup 2 steps and repeat step with assistance

			STUDENT/DATE/SITE & TASK STEP/CHAIN STEP											
			Bob											
			2/2[illegible]											
	ACTIVITY	TRAINER'S	1											
CUE	STEP	PROMPT	2											Comments
1.a. Door	1. Enter the restaurant													
2.a. Counter b. Cash register c. Order sign	2. Approach counter	1. "Go to the register/ end of the line" and point. 2. "Go to the register/ end of line" 3. "Okay, what do you do"												
3.a. Verbal request	3. Order	1. "Show them your book & touch wrist 2."Show them your book & touch elbow 3."Show them your book 4."Okay, what do you do												
4.a. Price b. Verbal request	4. Pay for order	1 "Give them your money" & move wrist to pocket. 2. " Give them your money" & touch elbow 3."Give them your book" 4."Okay, what do you do												
5.a. Change b. Line c. Pick-up sign	5. Move out of line and wait	1. " Move out of line." & point 2. "Move out of line." 3."Okay, what do you do												
6.a. Cashier request b. Tray	6. Obtain order	1. "Get your drink/food." 2. "Look."												
7.a. Table	7. Locate an empty table													
8.a. Seated at table b. Containers	8. Eat order													
9.a. Drink and food containers b. Trash can	9. Clean table & dispose of trash	1. "Put your trash in the can." & point to can. 2. "Put your trash in the can" 3. "Okay, now what."	1											
10.a. Door b. Exit sign	10. Exit restaurant													

STEP	EXPLANATION
4. Record data on the student's performance on FORM 6.	There are three possible codes for the student's response on each step. If the student performs the step without assistance you should enter "+". If the student performs the step with the designated prompt enter a "✓". If the student does not complete the step correctly or if you needed to provide additional assistance then enter a "-". The illustration of FORM 6 shows how Bob's teacher entered the codes in steps 9 and 10.

ILLUSTRATION OF
FORM 6
COMMUNITY TRAINING DATA FORM

STUDENT Bob ACTIVITY Using Fast Food Restaurants

CHAINING STRATEGY: Backward Chaining CORRECTION PROCEDURE: "No" Backup 2 steps and repeat step with assistance

CUE	ACTIVITY STEP	TRAINER'S PROMPT	STUDENT/DATE/SITE & TASK STEP/CHAIN STEP: Bob 2/29 1 2	Comments
1.a. Door	1. Enter the restaurant			
2.a. Counter b. Cash register c. Order sign	2. Approach counter	1. "Go to the register/ end of the line" and point. 2. "Go to the register/ end of line" 3. "Okay, what do you do"		
3.a. Verbal request	3. Order	1. "Show them your book & touch wrist 2. "Show them your book & touch elbow 3. "Show them your book 4. "Okay, what do you do		
4.a. Price b. Verbal request	4. Pay for order	1 "Give them your money" & move wrist to pocket. 2. " Give them your money" & touch elbow 3. "Give them your book" 4. "Okay, what do you do		
5.a. Change b. Line c. Pick-up sign	5. Move out of line and wait	1. " Move out of line." & point 2. "Move out of line." 3. "Okay, what do you do		
6.a. Cashier request b. Tray	6. Obtain order	1. "Get your drink/food." 2. "Look."		
7 a. Table	7. Locate an empty table			
8.a. Seated at table b. Containers	8. Eat order			
9.a. Drink and food containers b. Trash can	9. Clean table & dispose of trash	1. "Put your trash in the can." & point to can. 2. "Put your trash in the can" 3. "Okay, now what."	1 ✓	
10.a. Door b. Exit sign	10. Exit restaurant			

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Activity 7.4 cont

STEP	EXPLANATION
5. Enter session information on FORM 7.	Enter the date of the session in the top box, enter the number of the step of the site/task sequence in the middle box, and enter the number of the step for the backward chaining sequence in the bottom box.
6. Mark out non-training steps on FORM 7.	Using FORM 6 as a guide, mark out the steps of the activity that are not in training during each session. This is done simply by marking an "X" in the box in the session column of the steps not in training.
7. Summarize the data on FORM 7.	Following each session, summarize the data on FORM 7. This is done by "blackening in" the boxes in the session column of steps in which you recorded "+". The illustration of FORM 7 shows how Bob's teacher completed steps 5, 6, and 7.
Program Development Complete End	

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ILLUSTRATION OF
FORM 7
DATA SUMMARY FORM

STUDENT Bob ACTIVITY Using Fast Food Restaurants

	DATE/PROGRAM STEP															
	2/29															
	1															
STEP	2															
1. Enter the restaurant	X															
2. Approach the counter	X															
3. Order	X															
4. Pay for order	X															
5. Move out of line and wait	X															
6. Obtain order	X															
7. Locate an empty table	X															
8. Eat order	X															
9. Clean table & dispose of trash	X															
10. Exit																

ACTIVITY 7.5: Complete FORM 6.

Purpose: To develop a method of tracking student performance through instruction steps.

Materials: FORM 1 or 2, and FORM 6.

STEP	EXPLANATION
1. Enter descriptive information on FORM 6.	Enter the student's name and the activity on the appropriate line. In addition, enter the correction procedure on the correct line.
2. Enter the environmental cues and activity steps on FORM 6.	From FORM 1 or FORM 2 enter environmental cues and activity steps. The illustration of FORM 6 shows how Bob's teacher completed steps 1 and 2 for using fast food restaurants.

ILLUSTRATION OF
FORM 6
COMMUNITY TRAINING DATA FORM

STUDENT Bob ____________ ACTIVITY Using Fast Food Restaurants

CHAINING STRATEGY: ____________ CORRECTION PROCEDURE: "No", Backup 2 steps and repeat step with assistance.

CUE	ACTIVITY STEP	TRAINER'S PROMPT	STUDENT/DATE/SITE & TASK STEP/CHAIN STEP	Comments
1.a. Door	1. Enter the restaurant			
2.a. Counter b. Cash register c. Order sign	2. Approach counter			
3.a. Verbal request	3. Order			
4.a. Price b. Verbal request	4. Pay for order			
5.a. Change b. Line c. Pick-up sign	5. Move out of line and wait			
6.a. Cashier request b. Tray	6. Obtain order			
7.a. Table	7. Locate an empty table			
8.a. Seated at table b. Containers	8. Eat order			
9.a. Drink & food containers b. Trash can	9. Clean table & dispose of trash			
10.a. Door b. Exit sign	10. Exit restaurant			

ACTIVITY 7.5 cont

STEP	EXPLANATION
3. Enter the time delay sequences developed in Component 6.0 on FORM 6. Go to page 162. ACTIVITY 7.6: Complete FORM 7.	In Component 6.0 you developed time delay sequences for each step of the activity on which the student needed assistance. These sequences should be entered on FORM 6 in the appropriate box. The illustration of FORM 6 shows how Bob's teacher completed this step.

3?5

ILLUSTRATION OF FORM 6
COMMUNITY TRAINING DATA FORM

STUDENT Bob ____________ ACTIVITY Using Fast Food Restaurants

CHAINING STRATEGY: ____________ CORRECTION PROCEDURE: "No" Back up 2 steps and repeat step with assistance.

CUE	ACTIVITY STEP	TRAINER'S PROMPT	STUDENT/DATE/SITE & TASK STEP/CHAIN STEP Bob										Comments
1.a. Door	1. Enter the restaurant												
2.a. Counter b. Cash register c. Order sign	2. Approach counter	"Go to the register/ end of the line" and point to area. 1. no delay 4. 3" Sec 2. 1" Sec 5. 4" Sec 3. 2" Sec.											
3.a. Verbal request	3. Order	"Give them your book" touch wrist. 1. No delay 4. 3" Sec 2. 1" Sec 5. 4" Sec 3. 2" Sec											
4.a. Price b. Verbal request	4. Pay for order	"Give them your money" touch wrist. 1. No Delay 4. 3" Sec 2. 1" Sec 5. 4" Sec 3. 2" Sec											
5.a. Change b. Line c. Pick-up sign	5. Move out of line and wait	"Move out of line." & move wrist to pocket. 1. No Delay 4. 3" Sec 2. 1" Sec 5. 4" Sec 3. 2" Sec											
6.a. Cashier request b. Tray	6. Obtain order	"Get your drink/food." 1. No delay 4. 3" Sec 2. 1" Sec 5. 4" Sec 3. 2" Sec											
7.a. Table	7. Locate an empty table												
8.a. Seated at table b. Containers	8. Eat order												
9.a. Drink and food containers b. Trash can	9. Clean table & dispose of trash	"Put your trash in the can." & point to can. 1. No delay 4. 3" Sec 2. 1" Sec 5. 4" Sec 3. 2" Sec											
10.a. Door b. Exit sign	10. Exit restaurant												

ACTIVITY 7.6: Complete FORM 7.

Purpose: FORM 7 is designed as an on-going summary of the student performance in the activity. In contrast to the community training data form, FORM 7 allows you to track the students performance for up to 30 instructional sessions. This summary will provide the information necessary to revise the instructional program if the student does not master the activity.

Materials: FORM 6 and FORM 7.

STEP	EXPLANATION
1. Enter descriptive information on FORM 7	Enter the student's name and the activity on the appropriate lines.
2. Enter the steps of the activity of FORM 7.	Transfer the steps of the activity listed on FORM 6 to FORM 7 in the appropriate column.
Go to page 165. DECISION 7.3: Does the program use a whole task strategy?	

3?7

ILLUSTRATION OF
FORM 7
DATA SUMMARY FORM

STUDENT Bob______________ ACTIVITY Using Fast Food Restaurants

STEP	DATE/PROGRAM STEP															
1. Enter the restaurant																
2. Approach the counter																
3. Order																
4. Pay for order																
5. Move out of line and wait																
6. Obtain order																
7. Locate an empty table																
8. Eat order																
9. Clean table & dispose of trash																
10. Exit																

DECISION 7.4

DECISION	ACTION
Decision 7.4: Does the program use a whole task strategy?	YES. Go To Activity 7.7, page 166. NO. Go To Activity 7.8, page 172.

EXPLANATION: The way that FORMS 6 and 7 are set up for instruction will vary depending on whether you have selected a whole task or backward chaining strategy. If you are using a whole task strategy then go to Activity 7.7. If you have selected a backward chaining strategy then go to Activity 7.8.

ACTIVITY 7.7:
Complete FORM 6 and FORM 7 during each instructional session.

Purpose: To provide an on-going and up to date record of the student's performance during instruction.

Materials: FORM 6 and FORM 7.

STEP	EXPLANATION
1. Enter session information on FORM 6.	FORM 6 is designed to allow you to record the date of each instructional session and the step of the instructional sequence for introducing sites and tasks to the student. Leave the box designated for the step of the chaining strategy blank. The illustration of FORM 6 shows how Bob's teacher entered this information on FORM 6. In the top box he has entered the date and in the middle box he has entered the step of the instructional sequence from FORM 3. He left the bottom box blank.
2. Enter the number of the delay period in the upper left hand corner of each step box.	In this step you need to identify the delay period to be used for each step during the session. This is done by entering the number of the delay level that you will provide in the upper left hand corner of each step box. The illustration of FORM 6 show how Bob's teacher completed steps 1 and 2.

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ILLUSTRATION OF
FORM 6
COMMUNITY TRAINING DATA FORM

STUDENT Bob

ACTIVITY Using Fast Food Restaurants

CHAINING STRATEGY: Whole Task

CORRECTION PROCEDURE: "No" Back up 2 steps and repeat step with assistance.

CUE	ACTIVITY STEP	TRAINER'S PROMPT	STUDENT/DATE/SITE & TASK STEP/CHAIN STEP Bob 2/29 1										Comments
1.a. Door	1. Enter the restaurant												
2.a. Counter b. Cash register c. Order sign	2. Approach counter	"Go to the register/ end of the line" and point to area. 1. No delay 4. 3" Sec 2. 1" Sec 5. 4" Sec 3. 2" Sec	2										
3.a. Verbal request	3. Order	"Give them your book" touch wrist. 1. No delay 4. 3" Sec 2. 1" Sec 5. 4" Sec 3. 2" Sec	1										
4.a. Price b. Verbal request	4. Pay for order	"Give them your money" touch wrist. 1. No delay 4. 3" Sec 2. 1" Sec 5. 4" Sec 3. 2" Sec	1										
5.a. Change b. Line c. Pick-up sign	5. Move out of line and wait	"Move out of line." & move wrist to pocket 1. No delay 4. 3" Sec 2. 1" Sec 5. 4" Sec 3. 2" Sec	1										
6.a. Cashier request b. Tray	6. Obtain order	"Get your drink/food." 1. No delay 4. 3" Sec 2. 1" Sec 5. 4" Sec 3. 2" Sec	1										
7.a. Table	7. Locate an empty table												
8.a. Seated at table b. Containers	8. Eat order												
9.a. Drink and food containers b. Trash can	9. Clean table & dispose of trash	"Put your trash in the can." & point to can 1. No delay 4. 3" Sec 2. 1" Sec 5. 4" Sec 3. 2" Sec	1										
10.a. Door b. Exit sign	10. Exit restaurant												

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STEP	EXPLANATION
3. Record data on the student's performance on FORM 6.	There are three possible codes for the student's response on each step. If the student performs the step without assistance enter "+". If the student performs the step with assistance at the designated delay period enter "✓". If the student does not complete the step correctly then mark a "-". The illustration of FORM 6 shows how Bob's teacher completed this step.

3?2

ILLUSTRATION OF FORM 6 COMMUNITY TRAINING DATA FORM

STUDENT Bob ACTIVITY Using Fast Food Restaurants

CHAINING STRATEGY: Whole Task CORRECTION PROCEDURE: "No" Back up 2 steps and repeat step with assistance

CUE	ACTIVITY STEP	TRAININER'S PROMPT	STUDENT/DATE/SITE & TASK STEP/CHAIN STEP: Bob 2/20 1										Comments
1.a. Door	1. Enter the restaurant												
2.a. Counter b. Cash register c. Order sign	2. Approach counter	"Go to the register/ end of the line" and point to area. 1. No delay 4. 3" Sec 2. 1" Sec 5. 4" Sec 3. 2" Sec	2 / ✓										
3.a. Verbal request	3. Order	"Give them your book" touch wrist. 1. No delay 4. 3" Sec 2. 1" Sec 5. 4" Sec 3. 2" Sec	1 / ✓										
4.a. Price b. Verbal request	4. Pay for order	"Give them your money" touch wrist. 1. No delay 4. 3" Sec 2. 1" Sec 5. 4" Sec 3. 2" Sec	1 / ✓										
5.a. Change b. Line c. Pick-up sign	5. Move out of line and wait	"Move out of line." & move wrist to pocket 1. No delay 4. 3" Sec 2. 1" Sec 5. 4" Sec 3. 2" Sec	1 / ✓										
6.a. Cashier request b. Tray	6. Obtain order	"Get your drink/food." 1. No delay 4. 3" Sec 2. 1" Sec 5. 4" Sec 3. 2" Sec	1 / ✓										
7.a. Table	7. Locate an empty table		+										
8.a. Seated at table b. Containers	8. Eat order		+										
9.a. Drink and food containers b. Trash can	9. Clean table & dispose of trash	"Put your trash in the can." & point to can 1. No delay 4. 3" Sec 2. 1" Sec 5. 4" Sec 3. 2" Sec	1 ✓										
10.a. Door b. Exit sign	10. Exit restaurant		+										

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STEP	EXPLANATION
4. Enter session information on FORM 7.	Enter the date of the session in the top box and enter the program step number in the middle box. The bottom box for the step of the chaining sequence is left blank.
5. Summarize the data on FORM 7.	Following each session, summarize the data on FORM 7. This is done by "blackening in" the boxes in the session column of steps in which you recorded "+".
	The illustration of FORM 8 shows how Bob's teacher completed steps 4 and 5.
Program Development Complete End	

3?.2

ILLUSTRATION OF
FORM 7
DATA SUMMARY FORM

STUDENT Bob________________ ACTIVITY Using Fast Food Restaurants

	DATE/PROGRAM STEP													
	2/29													
	1													
STEP														
1. Enter the restaurant														
2. approach the counter														
3. Order														
4. Pay for order														
5. Move out of line and wait														
6. Obtain order														
7. Locate an empty table														
8. Eat order														
9. Clean table & dispose of trash														
10 Exit														

ACTIVITY 7.8: Complete FORM 6 and FORM 7 during each instructional session.

Purpose: To provide an on-going and up to date record of the student's performance during instruction.

Materials: Chaining Sequence from Activity 5.2, FORM 3, FORM 6, and FORM 7.

STEP	EXPLANATION
1. Enter session information on FORM 6.	FORM 6 is designed to allow you to record the date of each instructional session, the site and task step from FORM 3, and the chaining step from the sequence developed in Activity 5.2. The illustration of FORM 6 shows how Bob's teacher entered this information. In the top box he has entered the date, in the middle box the step of the site/task sequence, and the chaining step in the bottom box.

3?6

ILLUSTRATION OF
FORM 6
COMMUNITY TRAINING DATA FORM

STUDENT Bob ACTIVITY Using Fast Food Restaurants

CHAINING STRATEGY: Whole Task CORRECTION PROCEDURE: "No" Back up 2 steps and repeat step with assistance.

CUE	ACTIVITY STEP	TRAINER'S PROMPT	STUDENT/DATE/SITE & TASK STEP/CHAIN STEP										Comments
			Bob										
			2/28										
			1										
			2										
1.a. Door	1. Enter the restaurant												
2.a. Counter b. Cash register c. Order sign	2. Approach counter	"Go to the register/ end of the line" and point to area. 1. No delay 4. 3" Sec 2. 1" Sec 5. 4" Sec 3. 2" Sec											
3 a. Verbal request	3. Order	"Give them your book touch wrist. 1. No delay 4. 3" Sec 2. 1" Sec 5. 4" Sec 3. 2" Sec											
4.a. Price b. Verbal request	4. Pay for order	"Give them your money" touch wrist. 1. No delay 4. 3" Sec 2. 1" Sec 5. 4" Sec 3. 2" Sec											
5.a. Change b. Line c. Pick-up sign	5. Move out of line and wait	"Move out of line." & move wrist to pocket 1. No delay 4. 3" Sec 2. 1" Sec 5. 4" Sec 3. 2" Sec											
6.a. Cashier request b. Tray	6. Obtain order	" Get your drink/food." 1. No delay 4. 3" Sec 2. 1" Sec 5. 4" Sec 3. 2" Sec											
7.a. Table	7 Locate an empty table												
8 a. Seated at table b. Containers	8. Eat order												
9 a. Drink and food containers b. Trash can	9. Clean table & dispose of trash	"Put your trash in the can." & point to can 1. No delay 4. 3" Sec 2. 1" Sec 5. 4" Sec 3. 2" Sec											
10.a. Door b. Exit sign	10. Exit restaurant												

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STEP	EXPLANATION
2. Mark out the non-training steps on FORM 6.	Using the sequence developed in Activity 5.2, place an "X" through the box in session column of each activity step that student will not receive training. Leave the corresponding boxes of the steps in training blank. The illustration of FORM 6 shows how Bob's teacher completed this step. Bob completed step 10 of the activity without assistance during the Baseline probe, so Bob's teacher started him on step 2 of the backward chaining sequence. In this step Bob's teacher assisted him to complete steps 1 through 8 and Bob was required to complete steps 9 and 10. To adjust the Community Data Form to the backward chaining sequence Bob's teacher simply placed an "X" in the session column beside steps 1 through 8 and left the boxes for steps 9 and 10 blank.
3. Enter the number of the delay period in the upper left hand corner of each step box.	In this step you need to identify the delay period to be used for each step. This is done by entering the number of the delay level that you will provide for each step in training in the upper left hand corner of each step box. If no prompt is provided, leave the box blank. The illustration of FORM 6 shows how Bob's teacher completed these steps.

ILLUSTRATION OF
FORM 6
COMMUNITY TRAINING DATA FORM

STUDENT Bob

ACTIVITY Using Fast Food Restaurants

CHAINING STRATEGY: Whole Task

CORRECTION PROCEDURE: "No" Back up 2 steps and repeat step with assistance.

			STUDENT/DATE/SITE & TASK STEP/CHAIN STEP											
CUE	ACTIVITY STEP	TRAINER'S PROMPT	Bob 2/20 1 2											Comments
1.a. Door	1. Enter the restaurant		X											
2.a. Counter b. Cash register c. Order sign	2. Approach counter	"Go to the register/ end of the line" and point to area. 1. No delay 4. 3" Sec 2. 1" Sec 5. 4" Sec 3. 2" Sec	X											
3.a. Verbal request	3. Order	"Give them your book touch wrist. 1. No delay 4. 3" Sec 2. 1" Sec 5. 4" Sec 3. 2" Sec	X											
4.a. Price b. Verbal request	4. Pay for order	"Give them your money" touch wrist. 1. No delay 4. 3" Sec 2. 1" Sec 5. 4" Sec 3. 2" Sec	X											
5.a. Change b. Line c. Pick-up sign	5. Move out of line and wait	"Move out of line." & move wrist to pocket 1. No delay 4. 3" Sec 2. 1" Sec 5. 4" Sec 3. 2" Sec	X											
6.a. Cashier request b. Tray	6. Obtain order	"Get your drink/food." 1. No delay 4. 3" Sec 2. 1" Sec 5. 4" Sec 3. 2" Sec	X											
7.a. Table	7. Locate an empty table													
8.a. Seated at table b. Containers	8. Eat order													
9.a. Drink and food containers b. Trash can	9. Clean table & dispose of trash	"Put your trash in the can." & point to can 1. No delay 4. 3" Sec 2. 1" Sec 5. 4" Sec 3. 2" Sec												
10.a. Door b. Exit sign	10. Exit restaurant													

ACTIVITY 7.8 cont

STEP	EXPLANATION
4. Record data on the student's performance on FORM 6.	There are three possible codes for the student's response on each step. If the student performs the step without assistance enter "+". If the student performs the step with assistance at the designated delay level enter a "✓". If the student does not complete the step correctly enter a "-". The illustration of FORM 6 shows how Bob's teacher completed this step.

ILLUSTRATION OF
FORM 6
COMMUNITY TRAINING DATA FORM

STUDENT: Bob

ACTIVITY Using Fast Food Restaurants

CHAINING STRATEGY: Whole Task

CORRECTION PROCEDURE: "No" Back up 2 steps and repeat step with assistance.

CUE	ACTIVITY STEP	TRAINER'S PROMPT	STUDENT/DATE/SITE & TASK STEP/CHAIN STEP Bob 2/20 1 2										Comments
1.a. Door	1. Enter the restaurant												
2.a. Counter b. Cash register c. Order sign	2. Approach counter	"Go to the register/ end of the line" and point to area. 1. No delay 4. 3" Sec 2. 1" Sec 5. 4" Sec 3. 2" Sec											
3.a. Verbal request	3. Order	"Give them your book touch wrist. 1. No delay 4. 3" Sec 2. 1" Sec 5. 4" Sec 3. 2" Sec											
4.a. Price b. Verbal request	4. Pay for order	"Give them your money" touch wrist. 1. No delay 4. 3" Sec 2. 1" Sec 5. 4" Sec 3. 2" Sec											
5.a. Change b. Line c. Pick-up sign	5. Move out of line and wait	"Move out of line." & move wrist to pocket 1. No delay 4. 3" Sec 2. 1" Sec 5. 4" Sec 3. 2" Sec											
6.a. Cashier request b. Tray	6. Obtain order	"Get your drink/food." 1. No delay 4. 3" Sec 2. 1" Sec 5. 4" Sec 3. 2" Sec											
7.a. Table	7. Locate an empty table												
8 a. Seated at table b. Containers	8. Eat order												
9 a. Drink and food containers b. Trash can	9. Clean table & dispose of trash	"Put your trash in the can." & point to can 1. No delay 4. 3" Sec 2. 1" Sec 5. 4" Sec 3. 2" Sec	1 ✓										
10.a. Door b. Exit sign	10. Exit restaurant		+										

ACTIVITY 7.8 cont

STEP	EXPLANATION
5. Enter session information on FORM 7.	Enter the date of the session in the top box, enter the site/task sequence step number from FORM 3 in middle box, and the backward chaining step in the bottom box..
6. Mark out non-training steps on FORM 7.	Using steps of the backward chaining sequence on FORM 6 as a guide, mark out the steps of the activity that the student will not receive training. This is done simply by placing an "X" in the session column next to the step not in training. Leave the boxes for the steps in training blank.
7. Summarize the data on FORM 7.	Following each session, summarize the data on FORM 7. This is done by "blackening in" the boxes in the session column of steps in which you recorded "+". The illustration of FORM 7 shows how Bob's teacher completed steps 5, 6, and 7. For step of "Clean table and dispose of trash" he entered a 1 in the box and for the step of "Exit the restaurant" he blackened the box.
Program Development Complete End	

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ILLUSTRATION OF
FORM 7
DATA SUMMARY FORM

STUDENT Bob________________ ACTIVITY Using Fast Food Restaurants

STEP	DATE/PROGRAM STEP													
	2/29													
	1													
	2													
1. Enter the restrurant	X													
2. approach the counter	X													
3. Order	X													
4. Pay for order	X													
5. Move out of line and wait	X													
6. Obtain order	X													
7. Locate an empty table	X													
8. Eat order	X													
9. Clean table & dispose of trash	1													
10. Exit														

FORM 1
ACTIVITY ANALYSIS FORM FOR COMMUNITY ACTIVITIES
(Adapted from Horner, Sprague, & Wilcox, 1982)

Student(s) ______________________________ **Date** ______________________________

Activity

Performance Universe:

Where:

When:

What:

How:

Generic Environmental Cues	Variation in Cues Across Settings	Generic Activity Steps	Variation in Activity Steps

FORM 2
TASK ANALYSIS FORM

STUDENT ______________________ DATE ______________________

ACTIVITY ______________________

Instructional Conditions:

Where:

When:

What:

How:

ENVIRONMENTAL CUE	TASK ANALYSIS STEP

FORM 3
COMMUNITY PROGRAM SUMMARY SHEET

Student ______________________ Activity: ______________________

Training Sites: ______________________ Training Schedule: ______________________

Tasks: ______________________ Performance Criteria: ______________________

Session	Sites	Session	Tasks

FORM 4
BASELINE PROBE RECORD SHEET

STUDENT ____________________

ACTIVITY ____________________

+ - NO ASSISTANCE
I - INDIRECT VERBAL
D - DIRECT VERBAL
G- GESTURE

M - MODEL
PP - PHYSICAL PRIME
FP - FULL PHYSICAL

ENVIRONMENTAL CUE	ACTIVITY STEP	DATE/SITE/TIME/TASK				

FORM 5
BASELINE SUMMARY SHEET

STUDENT ____________________ ACTIVITY ____________________________

ESTIMATED TRAINING TIME______

ENVIRONMENTAL CUE	ACTIVITY STEP	PROMPT LEVEL	DIFFICULT STEP (✓)

FORM 6
COMMUNITY TRAINING DATA FORM

STUDENT ______________________ ACTIVITY ______________________________

CHAINING STRATEGY: ______________________ CORRECTION PROCEDURE: ______________________

CUE	ACTIVITY STEP	TRAINER'S PROMPT	STUDENT/DATE/SITE & TASK STEP/CHAIN STEP												COMMENTS

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FORM 7
DATA SUMMARY FORM

STUDENT ____________________ ACTIVITY ____________________

DATE/PROGRAM STEP

STEP

DESIGNING CLASSROOM-BASED INSTRUCTIONAL PROGRAMS

John McDonnell
Brad Ferguson

IMPROVING COMMUNITY-BASED INSTRUCTION PROJECT
SCHOOL AND COMMUNITY INTEGRATION PROGRAM
DEPARTMENT OF SPECIAL EDUCATION
SALT LAKE CITY, UTAH 84112

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THE IMPROVING COMMUNITY-BASED INSTRUCTION PROJECT

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U.S. DEPARTMENT OF EDUCATION

INTRODUCTION

This manual is <u>a supplement to Manual I: Designing Community-based Instructional Programs</u> and is designed to assist teachers to develop classroom-based instructional programs for students with moderate and severe handicaps. Whenever possible instruction on community activities should be conducted in the actual performance settings. However, there may be occasions when carrying out instruction solely in community settings will not be feasible. These are (1) when the teacher can not provide adequate practice to the student in community sites on difficult activity steps or (2) when the variation in environmental cues and activity responses can not be adequately sampled in the community training. In these situations, classroom-based instruction can be used effectively as a <u>supplement</u> to community-based training. Classroom-based instruction should always be paired with training in the actual performance settings.

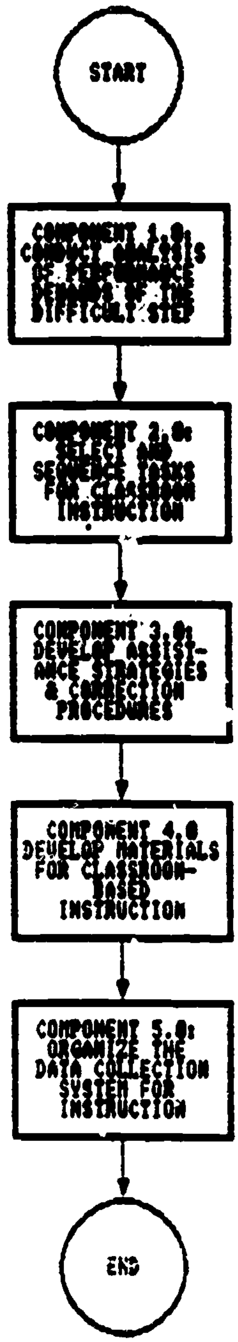
The manual was designed for teachers who are knowledgeable about basic instructional strategies for individuals with moderate and severe handicaps. These "basic" strategies include developing appropriate instructional objectives, conducting task analyses of activities, strategies for building chains of behavior, response prompting and fading procedures, and data collection. If you do not have this information base it is recommended that you become familiar with these strategies before you use the manual.

The manual is organized into 5 components. These components are (1) conducting an analysis of the demands of the difficult step, (2) selecting and sequencing tasks for instruction, (3) selecting assistance strategies and correction procedures, (4) developing training materials, and (5) organizing the data collection system. These components should be completed in order. Figure 1 presents the overall sequence in completing these components.

Each component includes 3 procedural elements including DECISIONS, ACTIVITIES, and STEPS. The DECISIONS presented in each component are designed to assist you to select the strategies that will be the most effective for the student with whom you are working. The DECISIONS will direct you to specific ACTIVITIES that you should complete in developing the instructional program. Each ACTIVITY is broken down into STEPS that will help you design the instruction procedures for the student and to complete the programming forms included in the manual.

At the end of each COMPONENT and DECISION you will provided directions about what to do next in developing the program. If for some reason you become confused about where to go next, refer to the flow charts presented at the beginning of each COMPONENT.

DESIGNING CLASSROOM-BASED INSTRUCTIONAL PROGRAMS

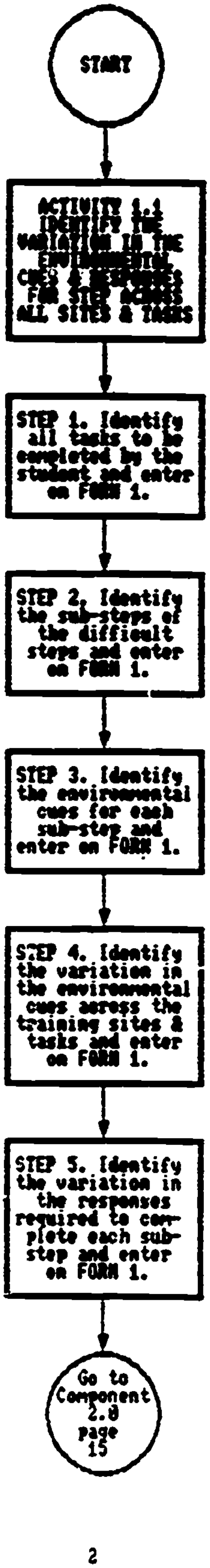


COMPONENT 1.0: CONDUCT AN ANALYSIS OF THE PERFORMANCE DEMANDS OF THE DIFFICULT STEP

Component 1.0 outlines the decisions and activities necessary to identify the performance demands of a difficult step for the student across all possible sites and tasks. This analysis will provide the information necessary to select tasks for instruction.

Figure 2 presents the specific sequence of activities to be completed in this component.

COMPONENT 1.0: CONDUCT AN ANALYSIS OF THE PERFORMANCE DEMANDS OF THE DIFFICULT STEP



ACTIVITY 1.1: Identify the variation in the environmental cues and responses for the step across all sites and tasks.

Purpose: To log the variations that occur in the environmental cues or responses of the difficult step across all sites and tasks.

Materials: FORM 1.

STEP	EXPLANATION
1. Identify all the tasks to be completed by the student and enter on FORM 1.	Tasks are the specific things that the student will do in completing the activity. In MANUAL I, the target activity for Bob was to purchase food and drink items in fast food restaurants. Bob's teacher had identified 6 specific tasks that Bob would have to purchase in order to meet this goal. These included a cola, chocolate milkshake, coffee, fries, cookies, and a sundae. The illustration shows how Bob's teacher completed FORM 1.

ILLUSTRATION OF
FORM 1
DIFFICULT STEP ANALYSIS FORM

Student(s) Bob

Date 3/8/88

Activity Fast Food Restaurants

Difficult Step(s) Ordering and Paying

Tasks Cola, Milkshake, Coffee, Fries, Cookie, and Sundae

Environmental Cues	Variation in Cues Across Tasks	Sub-steps	Variation in Sub-steps

STEP	EXPLANATION
2. Identify the sub-steps of the difficult steps and enter on FORM 1.	In this step you need to develop a fine grained analysis of the difficult step. Each of the sub-steps should define what the student *does*. A good way to generate these sub-steps is to imagine yourself having to provide directions to another person on how to complete the difficult step. In providing directions to the person each statement or direction must be limited to a maximum of 6 words. In the illustration of FORM 1, Bob's teacher has broken down the steps of ordering and paying in smaller sub-steps.

ILLUSTRATION OF
FORM 1
DIFFICULT STEP ANALYSIS FORM

Student(s) Bob

Date 3/8/88

Activity Fast Food Restaurants

Difficult Step(s) Ordering and Paying

Tasks Cola, Milkshake, Coffee, Fries, Cookie, and Sundae

Environmental Cues	Variation in Cues Across Tasks	Sub-Steps	Variation in Sub-steps
		1. Remove notebook from pocket. 2. Open to correct page. 3. Show page to cashier. 4. Put notebook in pocket. 5. Remove money from pocket. 6. Hand money to cashier. 7. Accept change. 8. Put change in pocket. 9. Move away from register.	

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STEP	EXPLANATION
3. Identify the environmental cues for each sub-step and enter on FORM 1.	In this step you should identify the environmental cues that should tell the student *when* and *how* to complete each sub-step. These environmental cues can include: 1. objects in the environment (e.g., a can of frozen orange juice), 2. events or actions that occur consistently in the settings (e.g., a street light changing color), 3. verbal or gestural directions provided by individuals who are consistently present in the setting (e.g., verbal request for payment by cashiers), 4. words, numerals, or symbols consistently present in the settings (e.g., the price on a cash register), 5. temporal or time cues (e.g., the time that a bus departs), or 6. successful completion of a step of the activity (e.g., exiting the store when the cashier gives you your change). Sometimes more than one environmental cue may control the student's completion of a sub-step. When you complete the analysis you should take care to identify all of the environmental cues that should control the student's completion of each sub-step. The illustration of FORM 1 shows the environmental cues that Bob's teacher identified for each sub-step of ordering and paying.

ILLUSTRATION OF
FORM 1
DIFFICULT STEP ANALYSIS FORM

Student(s) Bob

Date 3/3/88

Activity Fast Food Restaurants

Difficult Step(s) Ordering and Paying

Tasks Cola, Milkshake, Coffee, Fries, Cookie, and Sundae

Environmental Cues	Variation in Cues Across Tasks	Sub-Steps	Variation in Sub-steps
1.a. Cashier request. b. Notebook.		1. Remove notebook from pocket.	
2.a. Notebook in hand. b. Item page.		2. Open to correct page.	
3.a. Notebook opened to correct page. b. Cashier.		3. Show page to cashier.	
4.a. Order shown. b. Pocket.		4. Put notebook in pocket.	
5.a. Cashier request. b. Money.		5. Remove money from pocket.	
6.a. Money in hand.		6. Hand money to cashier.	
7.a. Cashier offers change.		7. Accept change.	
8.a. Change in hand. b. Pocket.		8. Put change in pocket.	
9.a. Change in pocket.		9. Move away from register.	

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STEP	EXPLANATION
4. Identify the variation in the environmental cues across the training sites and tasks and enter on FORM 1.	In this step you are simply trying to log all of the possible variations in each environmental cue across the sites and tasks. In identifying these variations you should try to be as specific as possible. The more precise you are in identifying these variations the more efficient the classroom-based training program will be in facilitating performance of the difficult step in the actual performance settings. The variations in the environmental cues will vary with changes in either the site or the tasks. Make sure that you log the variations in the environmental cues for all sites and tasks. It is recommended that you identify the variations in the environmental cues by observing other individuals perform the tasks in the training settings or by performing the activity yourself. The illustration of FORM 1 shows the variation that Bob's teacher identified for each environmental cue.

ILLUSTRATION OF
FORM 1
DIFFICULT STEP ANALYSIS FORM

Student(s) Bob Date 3/8/88

Activity Fast Food Restaurants Difficult Step(s) Ordering and Paying

Tasks Cola, Milkshake, Coffee, Fries, Cookie, and Sundae

Environmental Cues	Variation in Cues Across Tasks	Sub-Steps	Variation in Sub-steps
1.a. Cashier request.	"Can I help you?" "What will it be?" "Yes" "Can I take your order?" "Have you been helped?" "Welcome to ." "What would you like?"	1. Remove notebook from pocket.	
b. Notebook.	None.		
2.a. Notebook in hand.	None.	2. Open to correct page.	
b. Item page.	Small cola. Small chocolate shake. Small coffee with cream. Small fries. Cookies. Small hot fudge sundae.		
3.a. Notebook opened to correct page.	None.	3. Show page to to cashier.	
b. Cashier.	Behind the register. Beside the register.		
4.a. Order shown.	None.	4. Put notebook in pocket.	
b. Pocket.	None.		
5.a. Cashier request.	"That'll be ____dollars and _____cents." Says numbers.	5. Remove money from pocket.	
b. Price on register.	.35, .40, .50, .60 .75, .85, .90, .95, 1.15, 1.20, 1.30, 1.40, 1.65, 1.95		
c. Money.	None.		

ACTIVITY 1.1 cont

STEP	EXPLANATION
5. Identify the variation in the responses required to complete each sub-step and enter on FORM 1.	In this step you are trying to log the variation in the responses that the student will need to make to successfully complete the activity across all sites and tasks. The illustration of FORM 1 shows the variation in the sub-steps that Bob's teacher identified for the steps of ordering and paying.
Go to page 15. Component 2.0: Select and Sequence Tasks for Instruction.	

3^C

ILLUSTRATION OF
FORM 1
DIFFICULT STEP ANALYSIS FORM

Student(s) Bob Date 3/8/88

Activity Fast Food Restaurants Difficult Step(s) Ordering and Paying

Tasks Cola, Milkshake, Coffee, Fries, Cookie, and Sundae

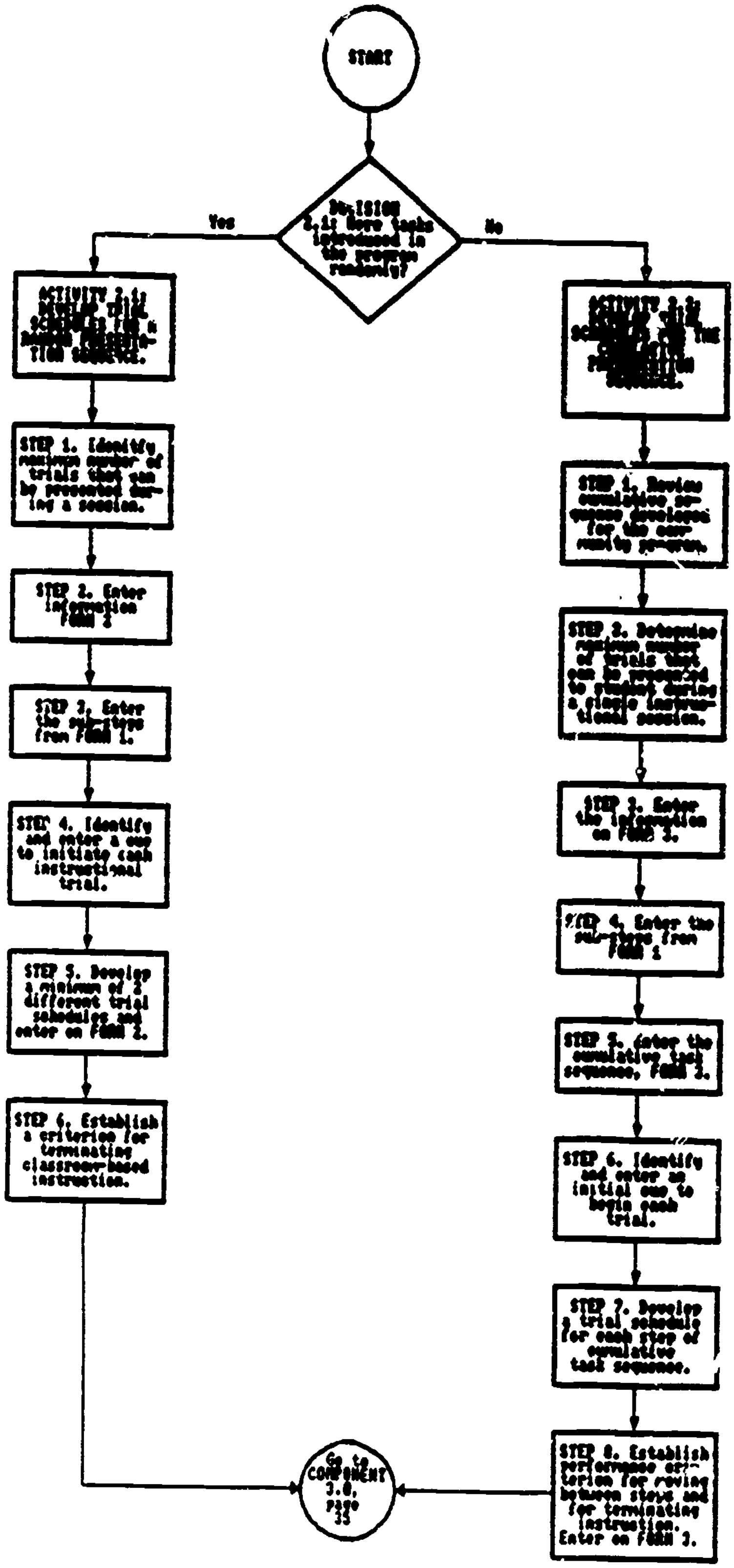
Environmental Cues	Variation in Cues Across Tasks	Sub-Steps	Variation in Sub-steps
1.a. Cashier request.	"Can I help you?" "What will it be?" "Yes" "Can I take your order?" "Have you been helped?" "Welcome to ." "What would you like?"	1. Remove notebook from pocket.	None.
b. Notebook.	None.		
2.a. Notebook in hand.	None.	2. Open to correct page.	Open to single pages cola, chocolate shake, coffee, fries, cookie sundae. Open to multiple pages cola & fries, cola & cookie, cola & sundae chocolate shake & fries chocolate shake & cookie, coffee & fries, coffee & cookie, & coffee & sundae
b. Item page.	Small cola. Small chocolate shake. Small coffee with cream. Small fries. Cookies. sundae.		
3.a. Notebook opened to correct page.	None.	3. Show page to cashier.	None.
b. Cashier.	Behind the register. Beside the register.		
4.a. Order shown.	None.	4. Put notebook in pocket.	None.
b. Pocket.	None.		
5.a. Cashier request.	"That'll be ___ dollars and ___cents." Says numbers.	5. Remove money from pocket.	None.
b. Price on register.	.35, .40, .50, .60, .75, .85, .90, 95, 1.15, 1.20, 1.30, 1.40, 1.65, 1.95		
c. Money.	None.		

COMPONENT 2.0:
SELECT AND SEQUENCE TASKS FOR CLASSROOM INSTRUCTION

Component 2.0 outlines the decisions and activities necessary to select and sequence tasks for classroom-based instructional programs. In selecting tasks you should identify the smallest sub-set of examples that represent the full range of tasks that the student will have to complete. These tasks should be arranged in a training sequence that will maximize the efficiency of instruction and prevent students from learning misrules about how to complete the tasks in the actual performance sites.

Figure 3 presents the sequence of decisions and activities necessary to complete Component 2.0.

COMPONENT 2.0: SELECT AND SEQUENCE TASKS FOR CLASSROOM INSTRUCTION



DECISION 2.1

DECISION	ACTION
Decision 2.1: Were tasks introduced to the student in the community-based instruction program in a random presentation sequence?	YES. Go To Activity 2.1, page 18. NO. Go To Activity 2.2, page 25.

EXPLANATION: Generally, the sequence that you develop for a classroom-based instructional program should reflect the sequence you used to introduce tasks to students in the community-based program. In other words, if you used a random presentation sequence in the community program you should also use a random sequence in the classroom program and if you used a cumulative sequence to introduce tasks to the student in the community training sites your classroom program sequence should use the same order.

ACTIVITY 2.1: Develop trial schedules for a random presentation sequence.

Purpose: The random presentation sequence allows the teacher to present all of the tasks to the student during a single instructional session. Research has suggested that such a presentation prevents the student from learning performance strategies unique to a single site or task. This will aide in establishing generalized performance of the activity.

Materials: FORM 1 and FORM 2.

STEP	EXPLANATION
1. Identify the maximum number of trials that can be presented during a single session.	In this step you are simply trying to estimate how many trials you can reasonably present to the student during a single instructional session. This estimate will provide some parameters for the length of the sequence. This estimate should be based on three variables including the amount of time required for the student to complete all sub-steps, the amount of time scheduled for instruction, and the number of students in the instructional group. Bob's teacher had scheduled 20 minutes each day for classroom instruction and would conduct 1-to-1 training with Bob. He estimated that it would take approximately 2 minutes for Bob to complete all of the sub-steps for ordering and paying. Using this information as a guide he determined that he should present a maximum of 10 trials to Bob during each session.
2. Enter descriptive information on FORM 2	Enter the name of the activity you are teaching and the difficult step(s) that are to be taught.
3. Enter the sub-steps from FORM 1.	From FORM 1 enter the sub-steps of the difficult steps at the top of the columns on FORM 2. The illustration of FORM 2 shows how Bob's teacher completed steps 2 and 3.
4. Identify and enter a cue to initiate each instructional trial.	In this step you need to identify the cue that you will use to begin each trial. The cue should tell the student what they are expected to do during each trial. For example, Bob's teacher decided that he would begin each trial by providing the cue "Bob, I want you to order and buy ______." The illustration shows how Bob's teacher entered this cue on FORM 2.

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ILLUSTRATION OF
FORM 2
TRIAL SCHEDULE FOR A RANDOM TASK SEQUENCE

ACTIVITY Fast Food Restaurants DIFFICULT STEP Ordering and paying

SEQUENCE NUMBER________ PERFORMANCE CRITERION________

INITIAL CUE: "Bob, I want you to order and buy (item)."

TRIAL	1	2	3	4	5	6	7	8	9
	Remove Notebook.	Open to correct page.	Show page.	Notebook in pocket.	Remove money.	Hand money.	Accept change.	Change in pocket.	Move away from table.

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ACTIVITY 2.1

STEP	EXPLANATION
5. Develop a minimum of 2 different trial schedules and enter on FORM 2.	In this step you need to develop a minimum of 2 different trial schedules for instruction. A trial schedule allows you to determine the order in which tasks will be presented to the student and the specific cues that you will present to the student on each trial of the session. In general, you should develop more than 2 schedules if the student must learn a large number of tasks or if you are only able to present a small number of tasks during each session. The number of trials included in the schedule should be based on the number of tasks that you estimated you could present during each session. In developing each trial, *first* begin by entering the trial number and then under each sub-step enter the cues that you will present to the student on each sub-step. You should approximate the cues that will be presented to the student by other individuals in the training sites. The specific cues that should be used for each sub-step across trials in the sequence should be selected from FORM 1. All cues should be presented *randomly* to the student across trials. Number each trial schedule and enter it at top of the form. This number will be used to indicate which schedule was used by the trainer during each session. The illustration of FORM 2 shows the first 10 trials developed by Bob's teacher for sequence 1. In order to ensure that Bob did not learn to respond based on the order of the tasks presented in the sequence he developed 2 additional trial schedules each consisting of 10 trials. These schedules will be presented randomly to Bob across instructional sessions.

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ILLUSTRATION OF
FORM 2
TRIAL SCHEDULE FOR A RANDOM TASK SEQUENCE

ACTIVITY Fast Food Restaurant DIFFICULT STEP Ordering and paying

SEQUENCE NUMBER 1 PERFORMANCE CRITERION ____________

INITIAL CUE: "Bob, I want you to order and buy (item)."

TRIAL	1 Remove Notebook.	2 Open to correct page.	3 Show page.	4 Notebook in pocket.	5 Remove money.	6 Hand money.	7 Accept change.	8 Change in pocket.	9 Move away from table.
1	Can I help you?	Cola page	In front	NONE	That'll be .40 please	NONE	Give $4.60	NONE	NONE
2	What will it be?	Fries page	To right side	NONE	That'll be .60 please	NONE	Give $4.40	NONE	NONE
3	Yes?	Choco-late shake & cookies	To left side	NONE	1 dollar and 65 cents please	NONE	Give $3.35	NONE	NONE
4	Can I take your order?	Coffee	To left side	NONE	35 cents	NONE	Give $4.65	NONE	NONE
5	Welcome to McDonald's	Sundae	In front	NONE	That'll be $1.40	NONE	Give $3.60	NONE	NONE
6	What would you like?	Cola & fries	In front	NONE	One sixty	NONE	Give $3.40	NONE	NONE
7	Yes	Coffee, cookie, & sundae	To right side	NONE	1 dollar and 95 cents, please.	NONE	Give $3.05	NONE	NONE
8	Can I help you?	Choco-late shake	To right side	NONE	That'll be 95 cents, please.	NONE	Give $4.05	NONE	NONE
9	Have you been helped?	Cola & sundae	To left side	NONE	One twenty	NONE	Give $3.80	NONE	NONE
10	Yes?	Cola	In front	NONE	50 cents	NONE	Give $4.50	NONE	NONE

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STEP	EXPLANATION
6. Establish a criterion for terminating classroom-based instruction. Go to page 35. Component 3.0: Develop Assistance Strategies and Correction Procedures	Establish a criterion that will allow you to determine when classroom instruction should be terminated. Generally, speaking you should set the criterion to ensure that the student has mastered the difficult step(s) but the criterion should not be so strict that the student gets "stuck" in the classroom program. If students do get stuck you increase the likelihood that the student's performance will be controlled by something unique to the classroom setting. This will prevent the student from transferring their performance to the training sites. Although it's important that the student can perform all of the sub-steps correctly, it is less critical that they are able to perform with 100% accuracy across all the tasks in every instructional session. The illustration of FORM 2 shows that Bob's teacher established the performance criterion at 80% correct across all trials on 2 consecutive instructional sessions.

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ILLUSTRATION OF
FORM 2
TRIAL SCHEDULE FOR A RANDOM TASK SEQUENCE

ACTIVITY Fast Food Restaurant DIFFICULT STEP Ordering and paying

SEQUENCE NUMBER 1 PERFORMANCE CRITERION 80% correct on 2 consecutive sessions

INITIAL CUE: "Bob, I want you to order and buy (items)."

TRIAL	1	2	3	4	5	6	7	8	9
	Remove Notebook.	Open to correct page.	Show page.	Notebook in pocket.	Remove money.	Hand money.	Accept change.	Change in pocket.	Move away from table.
1	Can I help you?	Cola page	In front	NONE	That'll be .40 please	NONE	Give $4.60	NONE	NONE
2	What will it be?	Fries page	To right side	NONE	That'll be .60 please	NONE	Give $4.40	NONE	NONE
3	Yes?	Chocolate shake & cookies	To left side	NONE	1 dollar and 65 cents please	NONE	Give $3.35	NONE	NONE
4	Can I take your order?	Coffee	To left side	NONE	35 cents	NONE	Give $4.65	NONE	NONE
5	Welcome to McDonald's	Sundae	In front	NONE	That'll be $1.40	NONE	Give $3.60	NONE	NONE
6	What would you like?	Cola & fries	In front	NONE	One sixty	NONE	Give $3.40	NONE	NONE
7	Yes	Coffee, cookie, & sundae	To right side	NONE	1 dollar and 95 cents, please.	NONE	Give $3.05	NONE	NONE
8	Can I help you?	Chocolate shake	To right side	NONE	That'll be 95 cents, please.	NONE	Give $4.05	NONE	NONE
9	Have you been helped?	Cola & sundae	To left side	NONE	One twenty	NONE	Give $3.80	NONE	NONE
10	Yes?	Cola	In front	NONE	50 cents	NONE	Give $4.50	NONE	NONE

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ACTIVITY 2.2: Develop trial schedules for the cumulative presentation sequence.

Purpose: To develop trial schedules that will allow you to systematically control the introduction of tasks to the student.

Materials: FORM 1 and FORM 3.

STEP	EXPLANATION
1. Review the cumulative sequence developed for the community program.	The order in which tasks are introduced to the student in the classroom program should reflect the task sequence developed for the community program. Before completing the Cumulative Sequencing Form review this sequence to ensure that the number of tasks and the order of introduction for the tasks are appropriate for the student. Bob's teacher had developed a 5 step cumulative sequence for introducing items in fast food restaurants. The sequence was: 1. Cola and Fries, 2. Chocolate shake and cookie, 3. Cola, chocolate shake, fries, and cookies. 4. Coffee and sundae. 5. Cola, chocolate shake, coffee, fries, cookies, or sundae.

STEP	EXPLANATION
2. Determine the maximum number of trials that can be presented to the student during a single instructional session.	Estimate the number of tasks or trials that can be presented to the student during each instructional session. This estimate will determine the length of the sequence. This estimate should take into account the amount of time that will be required to complete each trial, the total amount of time scheduled for each instructional session, and the number of students in the instructional group. In completing this step Bob's teacher estimated that it would take Bob about 2 minutes to go through the ordering and paying steps. He had scheduled 20 minutes each day for classroom instruction on these steps and he would be providing 1 to 1 instruction to Bob. Using this information he estimated that he would be able to provide a maximum of 10 trials during each session.
3. Enter the descriptive information on FORM 3.	Enter the name of the activity and difficult step(s) being trained on FORM 3.
4. Enter the sub-steps from FORM 1.	From FORM 1 enter the sub-steps of the difficult steps at the top of FORM 3.
5. Enter the cumulative task sequence on FORM 3.	Transfer the cumulative task sequence developed for the community program to FORM 3. The illustration of FORM 3 shows how Bob's teacher completed these steps.

ILLUSTRATION OF
FORM 3
TRIAL SCHEDULE FOR A CUMULATIVE TASK SEQUENCE

ACTIVITY Fast Food Restaurant   DIFFICULT STEP Ordering and paying

CUMULATIVE TASK SEQUENCE:

1. Cola & fries
2. Chocolate shake and cookies
3. Cola, chocolate shake, fries, or cookies
4. Coffee and sundae
5. Cola, chocolate shake, coffee, fries, cookies, or sundae

SEQUENCE NUMBER____________   PERFORMANCE CRITERION____________

INITIAL CUE: ____________

TRIAL	1 Remove Notebook.	2 Open to correct page.	3 Show page.	4 Notebook in pocket.	5 Remove money.	6 Hand money.	7 Accept change.	8 Change in pocket.	9 Move away from table.

STEP	EXPLANATION
6. Identify and enter an initial cue to begin each trial.	In this step you need to identify a cue that you will provide to the student to begin each trial. This cue should be designed to clearly specify what is expected of the student. The illustration of FORM 3 shows that Bob's teacher decided upon the cue "Bob, I want you to order and buy (item)."

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ILLUSTRATION OF
FORM 3
TRIAL SCHEDULE FOR A CUMULATIVE TASK SEQUENCE

ACTIVITY Fast Food Restaurant DIFFICULT STEP Ordering and paying

CUMULATIVE TASK SEQUENCE:
1. Cola & fries
2. Chocolate shake and cookies
3. Cola, chocolate shake, fries, or cookies
4. Coffee and sundae
5. Cola, chocolate shake, coffee, fries, cookies, or sundae

SEQUENCE NUMBER____________ PERFORMANCE CRITERION____________

INITIAL CUE: Bob, I want you to order and buy "items".

TRIAL	1 Remove Notebook.	2 Open to correct page.	3 Show page.	4 Notebook in pocket.	5 Remove money.	6 Hand money.	7 Accept change.	8 Change in pocket.	9 Move away from table.

ACTIVITY 2.2 cont

STEP	EXPLANATION
7. Develop a trial schedule for each step of the cumulative task sequence.	On this step you need to develop a trial schedule that will allow you to determine which tasks will be presented to the student and the specific cues that you will present to the student during each trial. The number of trials in the schedule should be based on the estimate of the number of tasks that could be presented during each session. When using a cumulative sequence you should develop a trial schedule for each step of the sequence. The tasks presented to the student in each trial schedule should change as the student moves through the cumulative task sequence. Enter the trial number and then list the cues that you will present across each sub-step. These cues should be selected from FORM 1. You should attempt to include all of the possible variations in the cues presented by the training sites and tasks. For example, in step 1 of the cumulative sequence developed for Bob the tasks that will be introduced are cola and fries. Bob's teacher began completing FORM 3 by entering the trial number. Then referring to FORM 1 he selected cues for each sub-step that sampled the range of cues found in the training settings. The illustration of FORM 3 shows the first 10 trials developed for step 1 of the cumulative task sequence. Bob's teacher developed trial schedules for each of the steps of the cumulative sequence each consisting of 10 trials.

ILLUSTRATION OF
FORM 3
TRIAL SCHEDULE FOR A CUMULATIVE TASK SEQUENCE

ACTIVITY Fast Food Restaurant   DIFFICULT STEP Ordering and paying

CUMULATIVE TASK SEQUENCE:
1. Cola & fries
2. Chocolate shake and cookies
3. Cola, chocolate shake, fries, or cookies
4. Coffee and sundae
5. Cola, chocolate shake, coffee, fries, cookies, or sundae

SEQUENCE NUMBER 1   PERFORMANCE CRITERION ____________

INITIAL CUE: "Bob, I want you to order and buy (item)."

TRIAL	1 Remove Notebook.	2 Open to correct page.	3 Show page.	4 Notebook in pocket.	5 Remove money.	6 Hand money.	7 Accept change.	8 Change in pocket.	9 Move away from table.
1	Can I help you?	Cola	In front	NONE	That'll be .40 please	NONE	Give $4.60	NONE	NONE
2	What will it be?	Fries	To right side	NONE	That'll be .[illegible]5 please	NONE	Give $4.10	NONE	NONE
3	Yes?	Fries	To left side	NONE	1 dollar and 65 cents please	NONE	Give $3.35	NONE	NONE
4	Can I take your order?	Cola	To left side	NONE	35. cents	NONE	Give $4.65	NONE	NONE
5	Welcome to McDonald's	Cola	In front	NONE	That'll be $1.40	NONE	Give $3.60	NONE	NONE
6	What would you like?	Cola & fries	In front	NONE	One sixty	NONE	Give $3.40	NONE	NONE
7	Yes	Fries	To right side	NONE	1 dollar and 95 cents, please.	NONE	Give $3.05	NONE	NONE
8	Can I help you?	Cola	To right side	NONE	That'll be 95 cents, please.	NONE	Give $4.05	NONE	NONE
9	Have you been helped?	Fries	To left side	NONE	One twenty	NONE	Give $3.80	NONE	NONE
10	Yes?	Cola	In front	NONE	80 cents	NONE	Give $4.20	NONE	NONE

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STEP	EXPLANATION
8. Establish a performance criterion for moving between the steps of the cumulative task sequence and for terminating instruction. Enter the criterion on FORM 3. Go to page 35. Component 3.0: Develop Assistance Strategies and Correction Procedures	In this step you need to establish a performance criterion for deciding when to move from one step of the cumulative task sequence to the next and for when to stop training. Although it's important that the student can perform all of the sub-steps correctly, it is less critical that they are able to perform with 100% accuracy across all tasks in every instructional session. The criterion should be designed to establish the student's capacity to complete the difficult steps reliably not perfectly. The illustration of FORM 3 shows the criterion that Bob's teacher established for teaching the difficult steps of ordering and paying. The specific criterion was 80% correct across all trials on 2 consecutive instructional sessions.

3?

ILLUSTRATION OF
FORM 3
TRIAL SCHEDULE FOR A CUMULATIVE TASK SEQUENCE

ACTIVITY Fast Food Restaurant DIFFICULT STEP Ordering and paying

CUMULATIVE TASK SEQUENCE:
1. Cola & fries
2. Chocolate shake and cookies
3. Cola, chocolate shake, fries, or cookies
4. Coffee and sundae
5. Cola, chocolate shake, coffee, fries, cookies, or sundae

SEQUENCE NUMBER 1 PERFORMANCE CRITERION 80% correct for 2 consecutive sessions

INITIAL CUE: "Bob, I want you to order and buy (item)."

TRIAL	1 Remove Notebook.	2 Open to correct page.	3 Show page.	4 Notebook in pocket.	5 Remove money.	6 Hand money.	7 Accept change.	8 Change in pocket.	9 Move away from table.
1	Can I help you?	Cola	In front	NONE	That'll be .40 please	NONE	Give $4.60	NONE	NONE
2	What will it be?	Fries	To right side	NONE	That'll be .60 please	NONE	Give $4.40	NONE	NONE
3	Yes?	Fries	To left side	NONE	1 dollar and 65 cents please	NONE	Give $3.35	NONE	NONE
4	Can I take your order?	Cola	To left side	NONE	35. cents	NONE	Give $4.65	NONE	NONE
5	Welcome to McDonald's	Cola	In front	NONE	That'll be $1.40	NONE	Give $3.60	NONE	NONE
6	What would you like?	Fries	In front	NONE	One sixty	NONE	Give $3.40	NONE	NONE
7	Yes	Cola	To right side	NONE	1 dollar and 95 cents, please.	NONE	Give $3.05	NONE	NONE
8	Can I help you?	Cola	To right side	NONE	That'll be 95 cents, please.	NONE	Give $4.05	NONE	NONE
9	Have you been helped?	Fries	To left side	NONE	One twenty	NONE	Give $3.80	NONE	NONE
10	Yes?	Cola	In front	NONE	50 cents	NONE	Give $4.50	NONE	NONE

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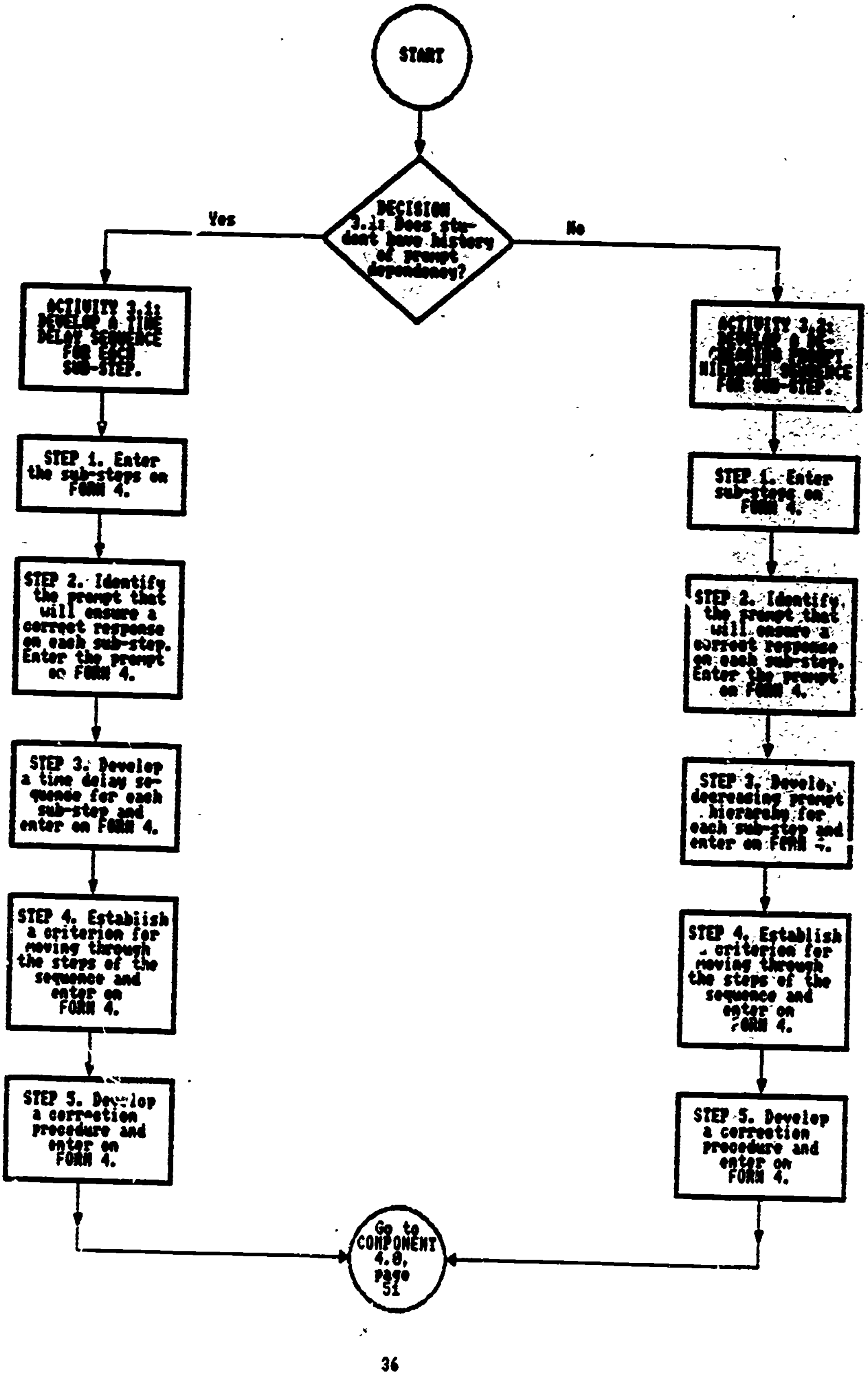
COMPONENT 3.0: DEVELOP ASSISTANCE STRATEGIES AND CORRECTION PROCEDURES

Component 3.0 outlines the decisions and activities necessary to develop assistance strategies and correction procedures for classroom-based instruction. The assistance strategies and correction procedures used should be designed to minimize the number of errors that students make during each session. Research has shown that the most effective strategies for accomplishing this are time delay and a decreasing prompt hierarchy. These strategies allow the teacher to provide assistance to the student prior to their response and systematically fade the assistance provided based on the student's performance.

Figure 4 presents the sequence of decisions and activities necessary to allow you to complete Component 3.0.

COMPONENT 3.0: DEVELOP ASSISTANCE STRATEGIES AND CORRECTION PROCEDURES



DECISION 3.1

DECISION	ACTION
Decision 3.1: Does the student have a history of prompt dependency?	YES. Go To Activity 3.1, page 38. NO. Go To Activity 3.2, page 44.

EXPLANATION: If you, or other teachers, have had difficulty fading assistance with the student it may mean that the student is prompt dependent. In other words, the student has learned to wait for the teacher's prompts in completing activities. If the student does have a history of prompt dependency it is recommended that you utilize a time delay procedure. It's structure allows you to reinforce self-initiations of the response. If the student does not have a history of prompt dependency then it is recommended that you use a decreasing prompt hierarchy. The decreasing prompt hierarchy appears to be equally efficient to the time delay procedure and research has suggested that it is easier to use in chains of behavior like community activities.

ACTIVITY 3.1: Develop a time delay sequence for each sub-step.

Purpose: To develop a response prompting and fading sequence for each sub-step. In the time delay procedure the amount of assistance you provide to the student does not change across instructional trials or sessions. Prompts are faded by systematically increasing the time between the presentation of the environmental cue for each sub-step and your prompt. Generally, it is most effective to increase the "delay" periods in 1 second increments.

Materials: FORM 1 and FORM 4.

STEP	EXPLANATION
1. Enter the sub-steps on FORM 4.	Using FORM 1 as a guide, enter the sub-steps on FORM 4.
2. Identify the prompt that will ensure a correct response on each sub-step. Enter the prompt for each sub-set on FORM 4.	Identify the *specific* prompts that will allow the student to complete each sub-step correctly on the first attempt. This information is available from the summary of the Baseline probe conducted in the community-training sites. The illustration of FORM 4 shows the prompts that Bob's teacher developed for each sub-step. During the community Baseline probe Bob had required a direct verbal prompt and a gesture to successfully complete the difficult step of ordering. Bob's teacher used this information to develop a prompt for each sub-step of ordering. On the sub-step of "Remove notebook from pocket," the prompt provided to Bob will be a direct verbal cue (i.e., "Take out your notebook.") and gestural cue (i.e., Point to the correct pocket). On the next sub-step the prompt will be a direct verbal cue (i.e, "Find *(item)*.") and a gestural cue (i.e., Pointing to the item indicator on the order card).

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ILLUSTRATION OF
FORM 4
CLASSROOM DATA COLLECTION FORM

STUDENT Bob

ACTIVITY Fast Food Restaurants

DIFFICULT STEP Ordering and Paying

CORRECTION PROCEDURE

PROMPT CRITERION

SUB-STEP	TRAINER'S PROMPT	DATE/SEQUENCE				
1. Remove notebook from pocket.	"Take out your notebook" & point.					
2. Open to correct page.	"Find (item)" & point to indicator.					
3. Show page.	"Hold it up" & motion.					
4. Put note book in pocket.	"Put it in your pocket" & point.					
5. Remove money from pocket	"Get your money" & motion.					
6. Hand money.	"Give me the money" & motion.					
7. Accept change.	"Take the money" & motion.					
8. Put change in pocket.	"Put it in your pocket" & point.					
9. Move away from table.	"Wait over there" & point.					

STEP	EXPLANATION
3. Develop a time delay sequence for each sub-step and enter on FORM 4	Develop a series of steps which increase the period of time that your prompt will be delayed. The steps should be structured to increase the delay period by 1 second increments. The sequence should begin with a "0 delay" step. The last step of the sequence should be at least 1 second beyond the period that you think is reasonable for the student to initiate the step. The prompt identified in each step will not change during training. No attempt will be made to reduce the level of this prompt across instructional trials or sessions. The prompt is "faded" by delaying its presentation to the student. For example, on the step of "Remove notebook from pocket.", Bob's teacher began the sequence with a "0" delay in which his prompt is provided immediately after the initial cue to start the trial. Once Bob removes his notebook reliably with the prompt presented immediately, his teacher will delay the prompt 1 second after the initial cue by counting to himself "one thousand one". If Bob removes the notebook within the 1 second delay he will be reinforced. If he does not remove his notebook within the 1 second delay his teacher would provide the prompt. Once Bob consistently removes his notebook within the 1 second delay, the delay will be increased to 2 seconds. This process will continue until the teacher has moved through all of the steps in the time delay sequence for the sub-step.

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ILLUSTRATION OF
FORM 4
CLASSROOM DATA COLLECTION FORM

STUDENT Bob
DIFFICULT STEP Ordering and paying
PROMPT CRITERION

ACTIVITY Fast Food Restaurants
CORRECTION PROCEDURE

SUB-STEP	TRAINER'S PROMPT	DATE/SEQUENCE				
1. Remove notebook from pocket.	"Take out your notebook" & point. 1. "0" delay 2. "1" sec. delay 3. "2" sec. delay 4. "3" sec. delay					
2. Open to correct page.	"Find (item)" & point to indicator. 1. "0" delay 2. "1" sec. delay 3. "2" sec. delay 4. "3" sec. delay					
3. Show page.	"Hold it up" & motion. 1. "0" delay 2. "1" sec. delay 3. "2" sec. delay 4. "3" sec. delay					
4. Put notebook in pocket.	"Put it in your pocket" & point. 1. "0" delay 2. "1" sec. delay 3. "2" sec. delay 4. "3" sec. delay					
5. Remove money from pocket.	"Get your money" & point. 1. "0" delay 2. "1" sec. delay 3. "2" sec. delay 4. "3" sec. delay					
6. Hand money.	"Give me the money" & motion. 1. "0" delay 2. "1" sec. delay 3. "2" sec. delay 4. "3" sec. delay					
7. Accept change.	"Take the money" & motion. 1. "0" delay 2. "1" sec. delay 3. "2" sec. delay 4. "3" sec. delay					
8. Put change in pocket.	"Put it in your pocket" & point. 1. "0" delay 2. "1" sec. delay 3. "2" sec. delay 4. "3" sec. delay					
9. Move away from table.	"Wait over there" & point. 1. "0" delay 2. "1" sec. delay 3. "2" sec. delay 4. "3" sec. delay					

STEP	EXPLANATION
4. Establish a criterion for moving through the steps of the sequence and enter on FORM 4.	Although you established a criterion for assessing when the student has mastered specific tasks in Component 2.0, you need to also establish a criterion for moving through the steps of the time delay sequence. The criterion must be structured to demonstrate that student can reliably perform at each step in the sequence but should not "overtrain" on any single step. Although there is not one "best" criterion for moving through time delay sequences, the recommended criterion is "correct performance on 5 consecutive trials". The number of trials correct may need be decreased or increased for some students.
5. Develop a correction procedure and enter on FORM 4.	While the time delay procedure is designed to prevent errors during training sometimes errors can not be avoided. You need to develop a procedure for effectively and efficiently correcting student errors. The correction procedure should be structured to require the student to complete the correct response before moving on to the next sub-step. It is recommended that the correction procedure contain three basic elements. These are (1) providing immediate feedback to the student that an error has occurred, (2) requiring the student to re-initiate and complete the step, and (3) providing the level of assistance necessary to ensure that the student completes the step correctly. In a time delay procedure, these elements could be implemented by (1) saying "No" as soon as the student makes an error, (2) backing up to the previous sub-step in the task sequence, and (3) providing the designated prompt for the step to ensure the student's correct response.
Go to page 51. Component 4.0: Develop materials for Classroom-Based Instruction..	

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ILLUSTRATION OF FORM 4
CLASSROOM DATA COLLECTION FORM

STUDENT Bob
DIFFICULT STEP Ordering and Paying
PROMPT CRITERION 5 consecutive correct trials

ACTIVITY Fast Food Restaurants
CORRECTION PROCEDURE 1. "No."
2. Back up 1 step.
3. Provide prompt

SUB-STEP	TRAINER'S PROMPT	DATE/SEQUENCE				
1. Remove notebook from pocket.	"Take out your notebook" & point. 1. "0" delay 2. "1" sec. delay 3. "2" sec. delay 4. "3" sec. delay					
2. Open to correct page.	"Find (item)" & point to indicator. 1. "0" delay 2. "1" sec. delay 3. "2" sec. delay 4. "3" sec. delay					
3. Show page.	"Hold it up" & motion. 1. "0" delay 2. "1" sec. delay 3. "2" sec. delay 4. "3" sec. delay					
4. Put note-book in pocket.	"Put it in your pocket" & point. 1. "0" delay 2. "1" sec. delay 3. "2" sec. delay 4. "3" sec. delay					
5. Remove money from pocket.	"Get your money" & point 1. "0" delay 2. "1" sec. delay 3. "2" sec. delay 4. "3" sec. delay					
6. Hand money.	"Give me the money" & motion. 1. "0" delay 2. "1" sec. delay 3. "2" sec. delay 4. "3" sec. delay					
7. Accept change.	"Take the money" & motion. 1. "0" delay 2. "1" sec. delay 3. "2" sec. delay 4. "3" sec. delay					
8. Put change in pocket.	"Put it in your pocket" & point. 1. "0" delay 2. "1" sec. delay 3. "2" sec. delay 4. "3" sec. delay					
9. Move away from table.	"Wait over there" & point. 1. "0" delay 2. "1" sec. delay 3. "2" sec. delay 4. "3" sec. delay					

ACTIVITY 3.2: Develop a decreasing prompt hierarchy sequence for each sub-step.

Purpose: To develop a response prompting and fading sequence for each sub-step. The decreasing prompt hierarchy is structured to reduce the amount of assistance provided to the student across instructional trials or sessions. The general sequence for decreasing the level of assistance is full physical assistance, physical primes, gestural, verbal directions, and indirect verbal directions.

Materials: FORM 1 and FORM 4.

STEP	EXPLANATION
1. Enter sub-steps on FORM 4.	Using FORM 1 as a guide, enter the sub-steps on FORM 4.
2. Identify the prompt that will ensure a correct response on each sub-step. Enter the prompt for each sub-step on FORM 4.	Identify the prompt that will be required for the student to correctly perform each sub-step. These prompts can be identified in the summary of the Baseline probe conducted in the community training sites. The illustration of FORM 4 shows the prompts that Bob's teacher identified for each sub-step. During the community Baseline probe Bob had required a direct verbal prompt and a gesture to successfully complete the difficult step of ordering. Bob's teacher used this information to develop a prompt for each sub-step of ordering. On the sub-step of "Remove notebook from pocket," he decided that he would provide a direct verbal cue (i.e., "Take out your notebook.") and gestural cue (i.e., Point to the correct pocket). On the next sub-step he decided he would provide the direct verbal cue (i.e, "Find *(item)*.") and a gestural cue (i.e., Pointing to the item indicator on the notebook card).

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ILLUSTRATION OF FORM 4
CLASSROOM DATA COLLECTION FORM

STUDENT Bob ____________ ACTIVITY Fast Food Restaurant ____

DIFFICULT STEP Ordering and Paying ____ CORRECTION PROCEDURE ______

PROMPT CRITERION ____________ ____________

SUB-STEP	TRAINER'S PROMPT	DATE/SEQUENCE				
1. Remove notebook from pocket.	"Take out your notebook" & point.					
2. Open to correct page.	"Find (item)" & point to indicator.					
3. Show page.	"Hold it up" & motion.					
4. Put note book in pocket.	"Put it in your pocket" & point.					
5. Remove money from pocket	"Get your money" & motion.					
6. Hand money.	"Give me the money" & motion.					
7. Accept change.	"Take the money" & motion.					
8. Put change in pocket.	"Put it in your pocket" & point.					
9. Move away from table.	"Wait over there" & point.					

STEP	EXPLANATION
3. Develop a decreasing prompt hierarchy for each sub-step and enter on FORM 4.	Using the prompts listed on FORM 4 as the starting point, you should develop a series of steps that will reduce the amount of assistance that you provide to the student across instructional trials. It is recommended that you pair verbal prompts with full physical assistance, physical prompts, and gestures. These "prompt blends" are easily faded because to reduce the amount of assistance to the student you simply drop out one of the prompts. Using these guidelines develop a sequence of the *specific* prompts you will provide on each sub-step. The illustration of FORM 4 shows how Bob's teacher developed a sequence of prompts for the sub-step of "Remove notebook from pocket". Bob's teacher developed a 3 step sequence that started with the prompts "Take out your notebook" and pointing to the correct pocket. In the next step he reduced the amount of assistance provided to Bob to just a verbal prompt (i.e., "Take out you notebook"). In the final step he provided an indirect verbal prompt (i.e., "Okay, get ready to order").

ILLUSTRATION OF FORM 4
CLASSROOM DATA COLLECTION FORM

STUDENT Bob ______________ ACTIVITY Fast Food Restaurants

DIFFICULT STEP Ordering and paying ______ CORRECTION PROCEDURE ______

PROMPT CRITERION ______________ ______________

SUB-STEP	TRAINER'S PROMPT	DATE/SEQUENCE				
1. Remove notebook from pocket.	1. "Take out your notebook" & point. 2. "Take out your notebook." 3. "Get ready to order."					
2. Open to correct page.	1. "Find *(item)*" & point to indicator. 2. "Find *(item)*." 3. "Let's go."					
3. Show page.	1. "Hold it up" & motion. 2. "Hold it up." 3. "Higher."					
4. Put notebook in pocket.	1. "Put it in your pocket" & point. 2. "Put it in your pocket." 3. "Now what."					
5. Remove money from pocket	1. "Get your money" & point. 2. "Get your money." 3. "Pay."					
6. Hand money.	1. "Give me the money" & motion. 2. "Give me the money." 3. "Okay."					
7. Accept change.	1. "Take the money" & point 2. "Take the money." 3. "Here."					
8. Put change in pocket.	1. "Put it in your pocket" & point. 2. Point. 3. Motion.					
9. Move away from table.	1. "Wait over there" & point. 2. Point. 3. Motion.					

STEP	EXPLANATION
4. Establish a criterion for moving through the steps of the sequence and enter on FORM 4.	Although you established a criterion for assessing when the student has mastered specific tasks in Component 2.0: Select and Sequence Tasks for Training, you also need to establish a criterion for moving through the steps of the decreasing prompt hierarchy sequence. The criterion must be structured to demonstrate that student can reliably perform at each step in the sequence but should not "overtrain" at any single step. While there is not one "best" criterion for moving through decreasing prompt hierarchy sequences, the recommended criterion is "correct performance on 5 consecutive trials". Correct performance means that the student completes the step correctly with the amount assistance the teacher provides, not that they perform the step independently. The number of correct trials required may need be decreased or increased for some students depending how rapidly they learn.
5. Develop a correction procedure and enter on FORM 4.	While the decreasing prompt hierarchy is designed to prevent errors during training sometimes errors are unavoidable. You need to develop a procedure for effectively and efficiently correcting student errors. The correction procedure should be structured to require the *student* to complete the correct response before moving on to the next sub-step. It is recommended that the correction procedure contain three elements. These are (1) provide immediate feedback to the student that an error has occurred, (2) require the student to correctly complete the step, and (3) provide the level of assistance necessary to ensure that the student completes the step correctly. In a decreasing prompt hierarchy, these three components can be included by (1) saying "No" as soon as the student makes an error, (2) backing up to the previous step in chain, and (3) requiring the student to complete the step while providing the prompt designated in the first step of the hierarchy.
Go to page 51. Component 4.0: Develop Materials for Classroom-Based Instruction.	

ILLUSTRATION OF FORM 4
CLASSROOM DATA COLLECTION FORM

STUDENT Bob

ACTIVITY Fast Food Restaurants

DIFFICULT STEP Ordering and Paying

PROMPT CRITERION 5 consecutive correct trials

CORRECTION PROCEDURE 1 "No."
2. Back up 1 step.
3. Provide step 1 prompt.

SUB-STEP	TRAINER'S PROMPT	DATE/SEQUENCE				
1. Remove notebook from pocket.	1. "Take out your notebook" & point. 2. "Take out your notebook." 3. "Get ready to order."					
2. Open to correct page.	1. "Find (item)" & point to indicator. 2. "Find (item)." 3. "Let's go."					
3. Show page.	1. "Hold it up" & motion. 2. "Hold it up." 3. "Higher."					
4. Put note book in pocket.	1. "Put it in your pocket" & point. 2. "Put it in your pocket." 3. "Now what."					
5. Remove money from pocket.	1. "Get your money" & point. 2. "Get your money." 3. "Pay."					
6. Hand money.	1. "Give me the money" & motion. 2. "Give me the money." 3. "Okay."					
7. Accept change.	1. "Take the money" & point 2. "Take the money." 3. "Here."					
8. Put change in pocket.	1. "Put it in your pocket" & point. 2. Point. 3. Motion.					
9. Move away from table.	1. "Wait over there" & point. 2. Point. 3. Motion.					

COMPONENT 4.0: DEVELOP MATERIALS FOR CLASSROOM-BASED INSTRUCTION

Component 4.0 outlines the specific decisions and activities necessary to develop appropriate materials for classroom-based instruction. The intent of classroom-based instruction is to facilitate performance in community training settings. As such, classroom instruction should utilize the materials that the student would normally encounter in these sites. If this is not feasible, then the teacher should develop alternative materials that approximate as closely as possible the materials in the training settings. Most often this can be done through the use of photographs, slides, or videotapes.

Figure 5 shows the sequence decisions and activities necessary to develop appropriate materials for classroom-based instruction.

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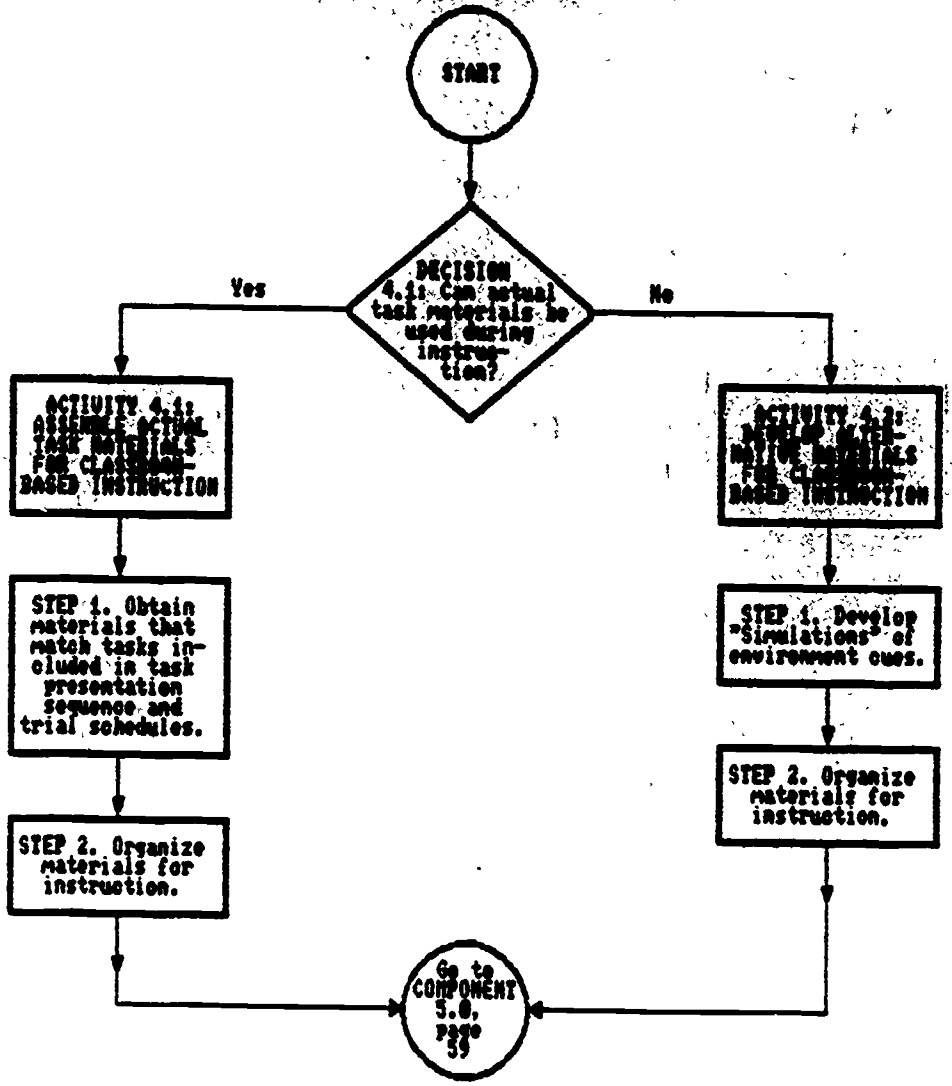
COMPONENT 4.0: DEVELOP MATERIALS FOR CLASSROOM-BASED INSTRUCTION



4^2

DECISION 4.1

DECISION	ACTION
Decision 4.1.: Can the actual task materials be used during classroom-based instruction?	YES. Go To Activity 4.1, page 55. NO. Go To Activity 4.2, page 57.

EXPLANATION: If the actual task materials can be used during classroom-based instruction the teacher should use the task presentation sequence and the trial schedules as a guide for obtaining necessary training materials. If the actual task materials can not be used during classroom-based instruction the teacher should use the task presentation sequence and the trial schedules as a guide for developing alternative materials for training.

ACTIVITY 4.1: Assemble actual task materials for classroom-based instruction.

Purpose: To gather and organize materials for instruction.

Materials: FORM 2 or FORM 3.

STEP	EXPLANATION
1. Obtain materials that match tasks included in the task presentation sequence and trial schedules.	Using the task presentation sequences and trial schedules as a guide you need to obtain or develop the materials necessary for classroom-based instruction. The only materials Bob's teacher felt were necessary to carry out classroom instruction on the steps of ordering and paying were Bob's communication notebook, several \$5.00 bills, and \$1.00 bills and miscellaneous change.
2. Organize materials for instruction.	Once the materials necessary for training have been gathered, you should organize them for training. The organization of the materials should reflect the order of introduction in the task presentation sequence.
Go to page 59. Component 5.0: Organize the Data Collection System For Instruction.	

404

ACTIVITY 4.2: Develop alternative materials for classroom-based instruction.

Purpose: To gather and organize materials for instruction.

Materials: FORM 2 or FORM 3.

STEP	EXPLANATION
1. Develop "Simulations" of environmental cues.	In order to maximize the similarity between classroom instruction and the community training sites, you should develop materials that represent as closely as possible the tasks presented to the student in the actual performance settings. Often photographs, slides, or videotape segments can be used to accomplish this task. The tasks presented in the trial schedules on FORM 2 or FORM 3 should serve as guide for developing the materials. Although Bob could easily use his communication notebook to "order" during classroom instruction, his teacher felt it was important that he be able to pay in response to the price appearing on the cash register. Since it was not feasible to obtain the range of registers that he would need to respond to in fast food restaurants, his teacher developed a series of slides of the registers found in the actual community settings. The amounts shown on the registers in the slides were the same as those included in the trial schedules for classroom-based instruction.
2. Organize materials for instruction.	In order to maximize the efficiency of training you should organize the photographs, slides, or videotape segments according to the trials schedules you have developed for training. The photographs, slides, or videotape segments should be presented in the same order presented in the trial schedules.
Go to page 59. Component 5.0: Organize the Data Collection System For Instruction.	

COMPONENT 5.0:
ORGANIZE THE DATA COLLECTION SYSTEM FOR INSTRUCTION

Component 5.0 outlines the decisions and activities necessary to develop a data collection system for classroom-based instruction. The focus of data collection during classroom-based instruction is on whether the student has mastered the difficult steps across activity tasks. As such, the data collection system should be designed to provide information about the student's performance across the targeted tasks.

Figure 6 presents the sequence of decisions and activities necessary to develop an effective data collection system for classroom instruction.

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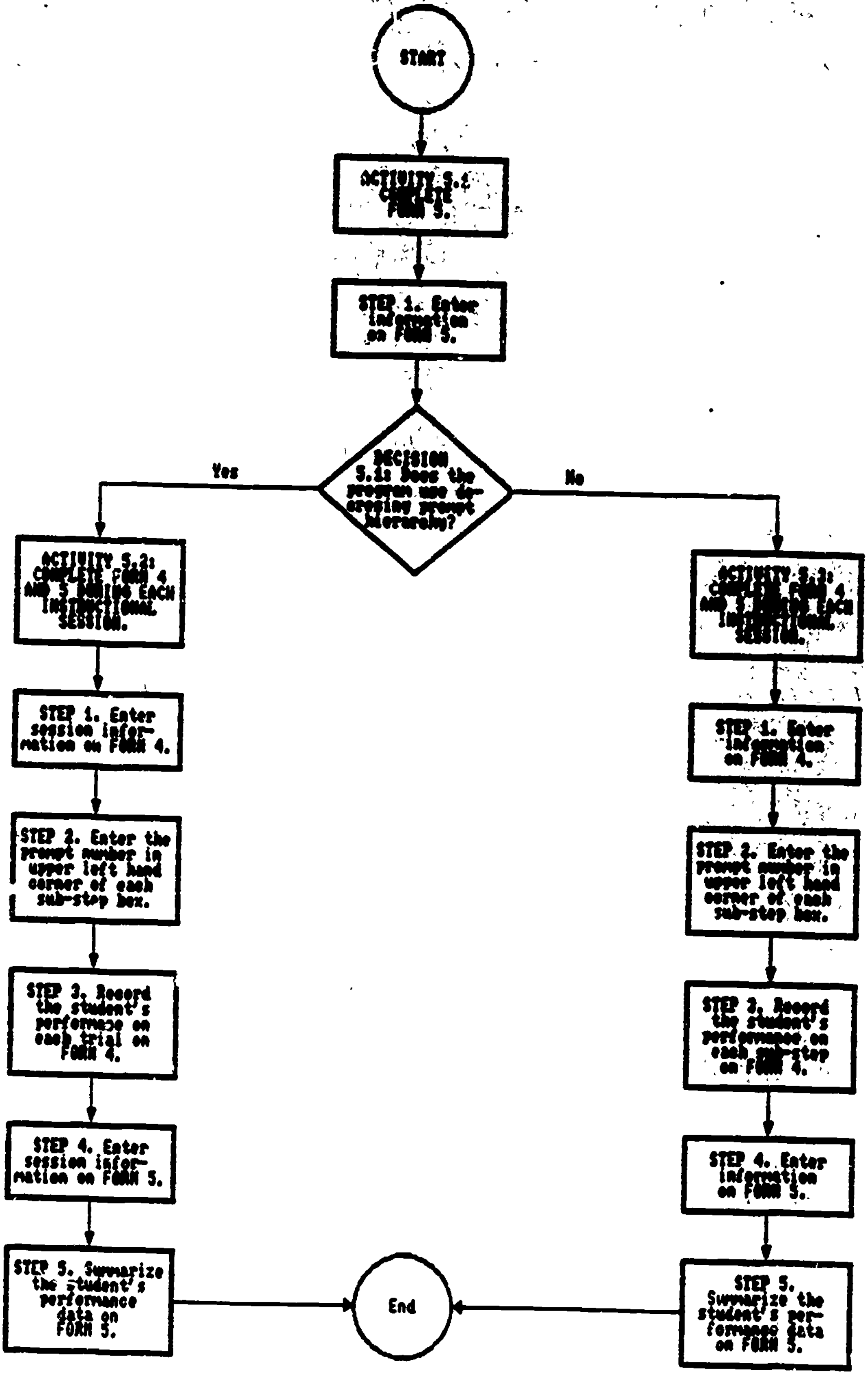
COMPONENT 5.0: ORGANIZE THE DATA COLLECTION



ACTIVITY 5.1: Complete FORM 5.

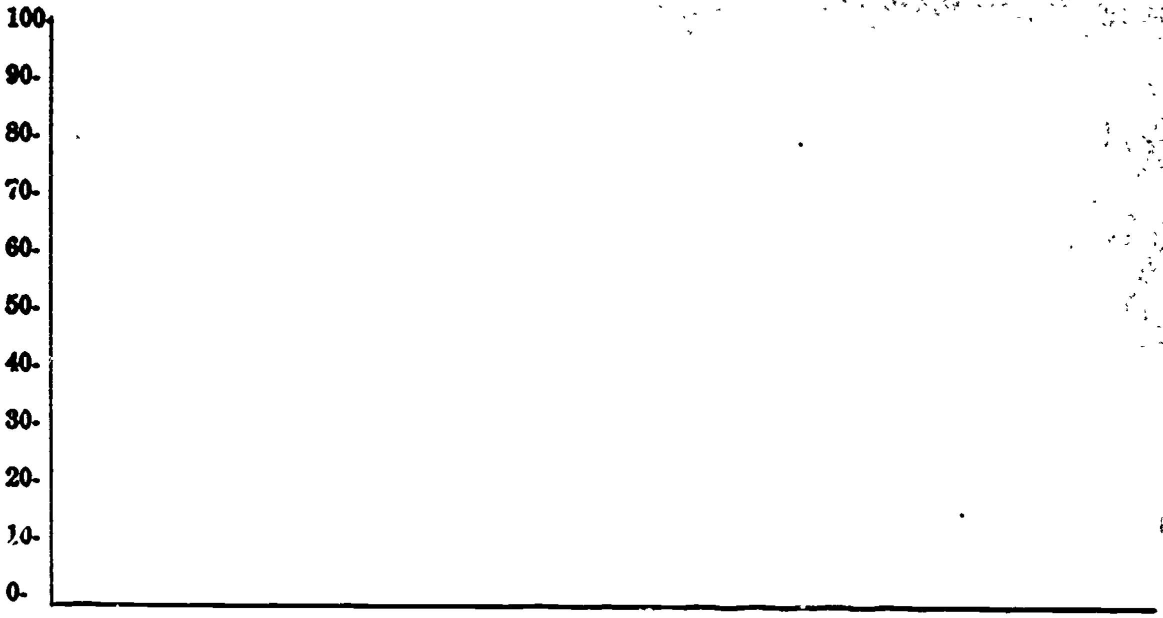
Purpose: FORM 5 is designed as on-going summary of the student performance during classroom-based instruction. This form allows you to graph the overall percent of tasks completed correctly on each step of the task presentation sequence. FORM 5 allows you to track the students performance for up to 25 instructional sessions.

Materials: FORM 5.

STEP	EXPLANATION
1. Enter descriptive information on FORM 5	Enter the student's name, the activity, and difficult steps on the appropriate lines. The illustration of FORM 5 shows how Bob's teacher completed this step.

ILLUSTRATION OF
FORM 5
CLASSROOM TRAINING SUMMARY FORM

NAME Bob ACTIVITY/DIFFICULT STEP Fast Food/Ordering & Paying



DATE																		
SEQ. STEP																		

400

DECISION 5.1

DECISION	ACTION
Decision 5.1: Does the program use a decreasing prompt hierarchy?	YES. Go To Activity 5.2, page 66. NO. Go To Activity 5.3, page 70.

EXPLANATION: If you are using a decreasing prompt hierarchy the way in which you gather and summarize the data during and across instructional trials will be different than if you are using a time delay procedure.

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ACTIVITY 5.2: Complete FORM 4 and 5 during each instructional session.

Purpose: To gather data on the student's performance across instructional sessions.

Materials: FORM 2 or FORM 3, FORM 4, and FORM 5.

STEP	EXPLANATION
1. Enter session information on FORM 4.	In the Date/Sequence column enter the date of the session and the number of the trial schedule being presented to the student during the session. This information is available from FORM 2 or FORM 3.
2. Enter the prompt number in the upper left hand corner of each sub-step box.	In this step you need to identify the prompt that you will provide to the student during the session. This is done by entering the number of the prompt that you will provide in the upper left hand corner of each sub-step box.
3. Record the student's performance on each trial on each sub-step on FORM 4.	There are three possible codes for the student's response on each sub-step. If the student performs the step without assistance you should enter a "+". If the student performs the step with the designated prompt enter a "✓". If the student does not complete the sub-step correctly or if you need to provide additional assistance then enter a "-" in the appropriate box. Enter one of these codes for each subset on each trial presented to the student The illustration of FORM 4 shows how Bob's teacher completed steps 1, 2, and 3 for the instructional session conducted on 2/29/88.

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ILLUSTRATION OF FORM 4
CLASSROOM DATA COLLECTION FORM

STUDENT Bob

ACTIVITY Fast Food Restaurant

DIFFICULT STEP Order and Paying

CORRECTION PROCEDURE 1. "No." 2. Back up 1 step. 3. Provide step 1 prompt

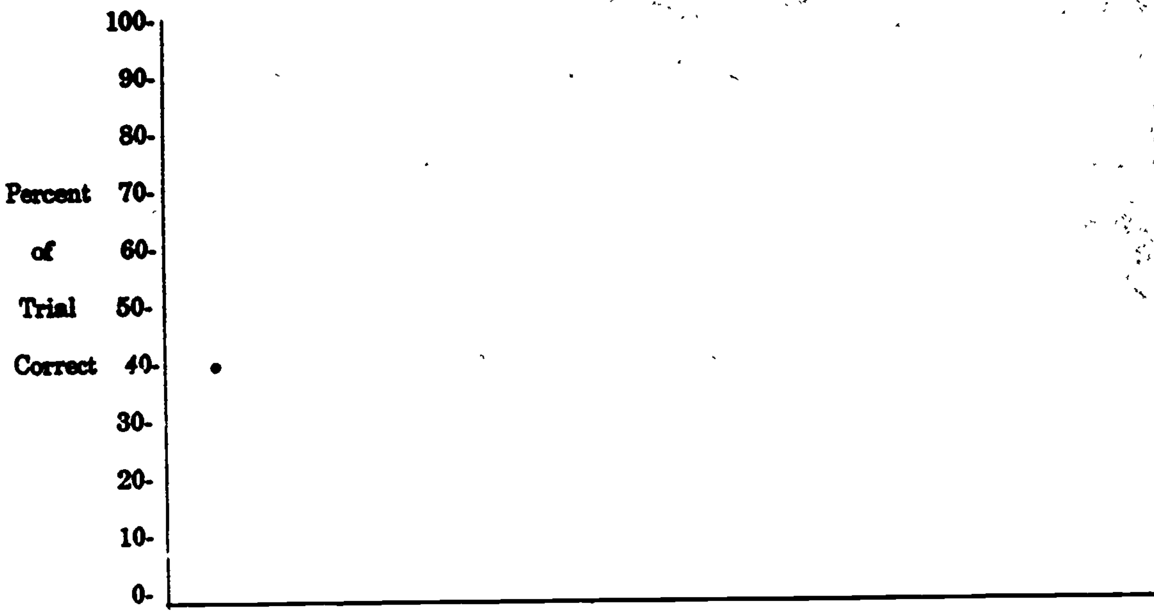
PROMPT CRITERION 5 consecutive correct trials

SUB-STEP	TRAINER'S PROMPT	DATE/SEQUENCE 2/29 1				
1. Remove notebook from pocket.	1. "Take out your notebook" & point. 2. "Take out your notebook." 3. Get ready to order."	1 ✓✓✓ + +				
2. Open to correct page.	1. "Find (item)" & point to indicator. 2. " Find (item)." 3. "Let's go."	1 ✓✓✓ + +				
3. Show page.	1. "Hold it up" & motion. 2. "Hold it up." 3. "Now what."	1 ✓✓✓ + +				
4. Put note book in pocket.	1. "Put it in your pocket" & point. 2. "Put it in your pocket." 3. " Now what."	1 ✓✓✓ + +				
5. Remove money from pocket	1. "Get your money" & motion. 2. "Get your money." 3. " Pay."	1 ✓✓✓ + +				
6. Hand money.	1. "Give me the money" & motion. 2. "Give me the money." 3. " Okay	1 ✓✓✓ + +				
7. Accept change.	1. "Take the money" & motion. 2. "Take the money." 3. "Here."	1 ✓✓✓ + +				
8. Put change in pocket.	1. "Put it in your pocket" & point. 2. "Point. 3. " Motion.	1 ✓✓✓ + +				
9. Move away from table.	1. "Wait over there" & point. 2. "Point. 3. "Motion	1 ✓✓✓ + +				

STEP	EXPLANATION
4. Enter session information on FORM 5.	Enter the date and the sequence number on the appropriate lines.
5. Summarize the student's performance data on FORM 5.	To summarize the student's performance data simply calculate the percentage of trials in which the student performed all sub-steps with out any assistance. To do this count the number of trials in which the student got "+" on all sub-steps and divide by the total number of trials conducted during the session and multiply by 100. The product is graphed on FORM 5. In the session conducted on 2/29/88 Bob completed a total of 2 trials correct out of a total of 5 trials. Bob's teacher divided 2 by 5 (2 ÷ 5 = .4) and multiplied by 100 (.4 x 100 = 40). This product was entered on FORM 5. The illustration of FORM 5 shows how Bob's teacher completed steps 4 and 5.
Simulation Complete, End.	

ILLUSTRATION OF
FORM 5
CLASSROOM TRAINING SUMMARY FORM

NAME Bob ACTIVITY/DIFFICULT STEP Fast Food/Ordering & Paying



DATE	2/29																	
SEQ. STEP	1																	

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ACTIVITY 5.3: Complete FORM 4 and 5 during each instructional session.

Purpose: To gather data on the student's performance across instructional sessions.

Materials: FORM 2 or FORM 3, FORM 4, and FORM 5.

STEP	EXPLANATION
1. Enter session information on FORM 4.	In the Date/Sequence column enter the date of the session and the number of the trial schedule being presented to the student during the session. This information is available from FORM 2 or FORM 3.
2. Enter the prompt number in the upper left hand corner of each sub-step box.	In this step you need to identify the prompt that you will provide to the student during the session. This is done by entering the number of the prompt that you will provide in the upper left hand corner of each sub-step box.
3. Record the student's performance on each sub-step on FORM 4.	There are three possible codes for the student's response on each sub-step. If the student performs the step without assistance you should enter a "+". If the student performs the step with the designated prompt enter a "✓". If the student does not complete the sub-step correctly or if you need to provide additional assistance then enter a "-" in the appropriate box. The illustration of FORM 4 shows how Bob's teacher completed steps 1, 2, and 3 for the instructional session conducted on 2/29/88.

ILLUSTRATION OF FORM 4
CLASSROOM DATA COLLECTION FORM

STUDENT Bob

ACTIVITY Fast Food Restaurants

DIFFICULT STEP Order and paying

PROMPT CRITERION 5 Consecutive correct trials

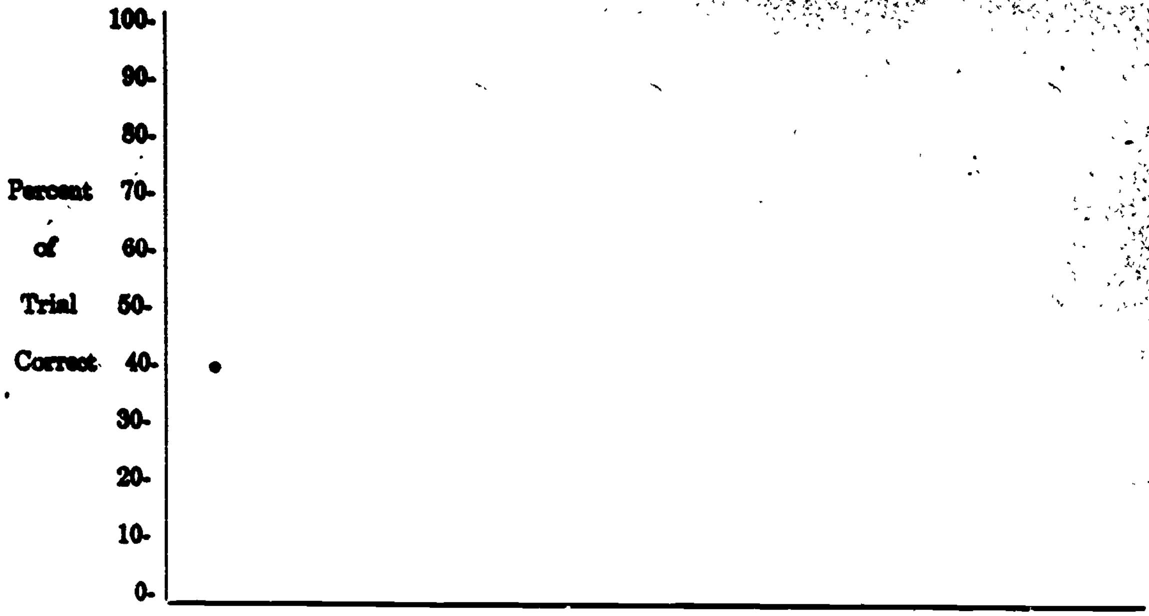
CORRECTION PROCEDURE 1. "No."
2. Back up 1 step
3. Provide prompt.

SUB-STEP	TRAINER'S PROMPT	DATE/SEQUENCE				
		2/29				
		1				
1. Remove notebook from pocket.	"Take out your notebook" & point. 1. "0" delay 2. "1" sec. delay 3. "2" sec. delay 4. "3" sec. delay	1 ✓✓✓ + +				
2. Open to correct page.	"Find (item)" & point to indicator. 1. "0" delay 2. "1" sec. delay 3. "2" sec. delay 4. "3" sec. delay	2 ✓-✓ + +				
3. Show page.	"Hold it up" & motion. 1. "0" delay 2. "1" sec. delay 3. "2" sec. delay 4. "3" sec. delay	1 ✓✓✓ + +				
4. Put note book in pocket.	"Put it in your pocket" & point. 1. "0" delay 2. "1" sec. delay 3. "2" sec. delay 4. "3" sec. delay	2 ✓✓✓ + +				
5. Remove money from pocket	"Get your money" & motion. 1. "0" delay 2. "1" sec. delay 3. "2" sec. delay 4. "3" sec. delay	2 - ✓✓ + +				
6. Hand money.	"Give me the money" & motion. 1. "0" delay 2. "1" sec. delay 3. "2" sec. delay 4. "3" sec. delay	2 -✓✓ + +				
7. Accept change.	"Take the money" & motion. 1. "0" delay 2. "1" sec. delay 3. "2" sec. delay 4. "3" sec. delay	1 ✓✓✓ + +				
8. Put change in pocket.	"Put it in your pocket" & point. 1. "0" delay 2. "1" sec. delay 3. "2" sec. delay 4. "3" sec. delay	1 ✓✓✓ + +				
9. Move away from table.	"Wait over there" & point. 1. "0" delay 2. "1" sec. delay 3. "2" sec. delay 4. "3" sec. delay	1 - ✓✓ + +				

STEP	EXPLANATION
4. Enter session information on FORM 5.	Enter the date and the sequence number on the appropriate lines.
5. Summarize the student's performance data on FORM 5.	To summarize the student's performance data simply calculate the percentage of trials in which the student performed all sub-steps with out *any* assistance. To do this count the number of trials in which the student got "+" on all sub-steps and divide by the total number of trials conducted during the session and multiply by 100. The product is graphed on FORM 5. In the session conducted on 2/29/88 Bob completed a total of 2 trials correct out of a total of 5 trials. Bob's teacher divided 2 by 5 (2 ÷ 5 = .4) and multiplied by 100 (.4 x 100 = 40). This product was entered on FORM 5. The illustration of FORM 5 shows how Bob's teacher completed steps 4 and 5.
Simulation Complete, End.	

ILLUSTRATION OF
FORM 5
CLASSROOM TRAINING SUMMARY FORM

NAME Bob ACTIVITY/DIFFICULT STEP Fast Food/Ordering & Paying



DATE	2/29																	
SEQ. STEP	1																	

Attachment E

Program Analysis Form

FORM 1
DIFFICULT STEP ANALYSIS FORM

Student(s) ______________________ Date ______________________

Activity ______________________ Difficult Step(s) ______________________

Tasks ______________________

____

Environmental Cues	Variation in Cues Across Tasks	Sub-steps	Variation in Sub-steps

FORM 2
TRIAL SCHEDULE FOR A RANDOM TASK SEQUENCE

ACTIVITY______________________ DIFFICULT STEP______________________

SEQUENCE NUMBER__________ PERFORMANCE CRITERION__________

INITIAL CUE: ______________________________

TRIAL	1	2	3	4	5	6	7	8	9

FORM 3
TRIAL SCHEDULE FOR A CUMULATIVE TASK SEQUENCE

ACTIVITY____________________ DIFFICULT STEP____________________

CUMULATIVE TASK SEQUENCE:

SEQUENCE NUMBER____________ PERFORMANCE CRITERION____________

INITIAL CUE: ____________________

TRIAL	1	2	3	4	5	6	7	8	9

FORM 4
CLASSROOM DATA COLLECTION FORM

STUDENT ______________________ ACTIVITY ______________________

DIFFICULT STEP ______________________ CORRECTION PROCEDURE ______________________

PROMPT CRITERION ______________________ ______________________

SUB-STEP	TRAINER'S PROMPT	DATA SEQUENCE				

FORM 5
CLASSROOM TRAINING SUMMARY FORM

NAME__________________ ACTIVITY/DIFFICULT STEP________________________

100-
90-
80-
70-
60-
50-
40-
30-
20-
10-
0-

DATE																		
SEQ. STEP																		

COMMUNITY-BASED INSTRUCTIONAL PROGRAM EVALUATION FORM

PROGRAM DEVELOPER:______________________________ ACTIVITY:

PROGRAM ELEMENT	CRITERION	+ / -
1.0: ANALYSIS OF PERFORMANCE DEMANDS		
If program utilized a general case approach respond to items 1.1 - 1.4 then skip to 2.0		
1.1 Instructional universe	Program specifies where, when, what, and how the student will be expected to perform the activity on FORM 1.	1.1
1.2 Activity steps	Program lists observable steps on FORM 1.	1.2
1.3 Environmental cues	Program lists an environmental cue(s) for each activity step on FORM 1.	1.3
1.4 Variation in cues and steps	Program identifies variations in at least one generic cue and one activity step on FORM 1.	1.4
If program utilized a task analysis approach of a single site respond to Items 1.5 - 1.7 then skip to 3.0.		
1.5 Instructional conditions	Program specifies where, when, what, and how the student will be expected to perform the activity on FORM 2.	1.5
1.6 Activity steps	Program lists observable steps on FORM 2.	1.6
1.7 Environmental cues	Program lists an environmental cue(s) for each activity step on FORM 2.	1.7
	PAGE 1 TOTALS	

PROGRAM ELEMENT	CRITERION	+ / -
2.0: SELECT SITES AND TASKS FOR TRAINING		
2.1 Training sites	Sites selected for training on FORM 3 represent the range of variation in environmental cues and activity steps present in the instruction universe (refer to FORM 1).	2.1
3.0: SEQUENCE SITES AND TASKS		
If program utilized a random sequence of sites and/or tasks, respond to items 3.1 and 3.2 then skip to 4.0.		
3.1 Random sequence	Sites and/or tasks are randomized over 20 sessions with each site and/or item appearing at least once every 5 sessions on FORM 3.	3.1
3.2 Performance criterion	Performance criterion stated on FORM 3 specifies how well and how long the student will be expected to perform the activity in order to demonstrate mastery.	3.2
If program utilized a cumulative sequence of sites and/or tasks, respond to items 3.3 and 3.4, then skip to 4.0.		
3.3 Cumulative sequence	Sites and/or tasks are sequenced cumulatively, final step includes all sites and/or tasks presented randomly on FORM 3.	3.3
3.4 Performance criterion	Performance criterion stated on FORM 3 specifies how well and how long the student will be expected to perform the activity in order to demonstrate mastery.	3.4
	PAGE 2 TOTAL	

PROGRAM ELEMENT	CRITERION	+ / -
4.0: CONDUCT BASELINE PROBES		
4.1 Cues and steps	Generic environmental cues and activity steps are transferred from FORM 1 or FORM 2 to FORM 4.	4.1
4.2 Date of baseline probe	Data(s) of baseline probes are recorded in appropriate cells on FORM 4.	4.2
4.3 Start and stop times	Start and stop times form each probe session are recorded in appropriate cells on FORM 4.	4.3
4.4 Tasks	Tasks completed in each probe site are recorded in appropriate cells on FORM 4.	4.4
4.5 Summary	Prompts recorded during baseline probes as recorded on FORM 4 are summarized on FORM 5 for each step on which an error occurred. the highest level of assistance is recorded on FORM 5.	4.5
4.6 Calculate training time	Estimated training time is accurately calculated and recorded on FORM 5.	4.6
5.0: SELECT A CHAINING STRATEGY AND 6.0: SELECT ASSISTANCE STRATEGY Elements of 5.0 and 6.0 are manifest in COMPONENT 7.0.		
	PAGE 3 TOTAL	

PROGRAM ELEMENT	CRITERION	+ / -
7.0: DATA COLLECTION AND PROGRAM FILE		
7.1 Chaining strategy	Either "whole task" or "backward" is recorded in appropriate blank on FORM 6.	7.1
7.2 Correction procedure	A correction procedure in recorded in the appropriate cell on FORM 6. Correction procedure includes: 1) feedback component, 2) recycle component, and 3) re-present with assistance component.	7.2
7.3 Cues and steps	Generic environmental cues and activity steps from FORM 1 or FORM 2 are recorded on FORM 6.	7.3
7.4 Prompt system	Either a time-delay or decreasing prompt hierarchy sequence is recorded on FORM 6 for each step on which an error occurred as listed on FORM 5. Prompt system on FORM 6 utilized prompts for each step that ensures correct responding.	7.4
7.5 Data summary	FORM 7 lists activity steps.	7.5
	PAGE 4 TOTAL	

COMMENTS	PROGRAM TOTAL	