Teaching Basic Photography Skills to a Severely Handicapped Young Adult Using Simulated Materials

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Leisure skills programming for individuals with severe handicapping conditions has recently emerged as a prominent curricular domain. The present investigation examined acquisition, maintenance, and generalization aspects of teaching basic photography skills to a 20-year-old severely mentally retarded male with Down's syndrome. Training occurred in a public school setting and at the learner's place of residence. Training procedures combined simulation, a least-to-most intrusive prompting hierarchy, basic reinforcement strategies, and a method of assisting the learner make the connection between simulated and real materials. Within a multiple-probe design across four phases, the learner acquired and maintained the skills of loading film in a camera, using a flash attachment, deciding what to photograph, and taking a photograph. Additionally, generalization effects from simulated to real materials showed increasing covariation as the program progressed. Implications of this study focus on the viability of photography as a potential hobby for severely handicapped individuals and on questions related to simulation and generalization effects.

As recreation and leisure skills for severely handicapped persons have emerged as a curricular domain, the bulk of the literature has addressed the teaching of play skills (Hopper & Wambold, 1978; Kissel & Whitman, 1977; Strain, 1975; Wehman, 1976, 1979; Wehman & Marchant, 1978), gross motor activities (Moon & Renzaglia, 1982; Wehman, Renzaglia, Schutz, Gray, James, & Karan, 1976; Wehman & Schleien, 1979), and games (Hill, Wehman, & Horst, 1982; Rankin, Bates, Baldwin, Kelly & Hannah, 1975; Wehman, Renzaglia, Berry, Schutz, & Karan, 1978; Wehman & Schleien, 1979). As one examines the areas within recreation/leisure (e.g., games, sports, object manipulation), hobbies may be distinguished to some extent by their commonalities. Hobbies typically can be done alone and frequently culminate in a permanent product, as in needlepoint, painting, and stamp collecting. Although hobbies may have general guidelines, they tend to be unlike games and sports in that they have no set rules and can be engaged in individually and in individualistic ways.

Although hobbies have been addressed in the literature (Marchant, 1979; Wehman & Schleien, 1979), in general the research regarding hobbies for the severely handicapped has been sparse. Despite this empirical void, hobbies remain as one of the more normalizing activities available to a person with a severe handicap. Marchant (1979) has suggested that severely handicapped individuals in the process of selecting a hobby be exposed to a wide variety of hobbies. She cautioned that proficiency at these tasks was unlikely to occur without direct, systematic instruction.

When considering photography as a potential hobby, complexity of the skills involved and cost constraints are prime concerns. While photography requires a wide range of skills, today's instant cameras have simplified the equipment operations greatly and, at the time of this writing, could be purchased for approximately $23 and up. A roll of self-developing color film cost approximately $7.50. Once a camera is available, an average weekly cost of less than $2 remains, based on the use of one roll of film per month. Other activities that might be done on a weekly basis, such as going
to a movie, bowling, or engaging in a craft activity may incur comparable or even greater costs. For the cost involved, photography embodies qualities that would seem to justify it as a leisure alternative by offering a chronologically age-appropriate hobby that can be enjoyed throughout a lifetime and by providing a permanent product. Since it is widely engaged in by nonhandicapped individuals, photography may be seen as normalizing. Further, photography offers opportunities to participate in other related activities such as making purchases, traveling in the community, and sharing photos as a social activity.

The following study describes the assessment procedures, instructional techniques, and implications of teaching a severely mentally retarded young adult the hobby of photography. A training paradigm combining simulation, a least-to-most intrusive prompting hierarchy, basic reinforcement strategies, and a method of making the connection between training and probe sessions was implemented and evaluated in an attempt to determine its effectiveness in providing the learner with basic photography skills using real materials.

Method

Subject

Mark, a 20-year-old male with Down’s syndrome and no physical or sensory handicaps, served as the subject of this study. Mark was categorized as severely mentally retarded based upon results of Binet intelligence testing and observations of adaptive behavior deficits. The most recent 3-year school psychological evaluation produced a Binet IQ score of “below 32,” a finding consistent with previous testing results. Mark was a generalized motor and verbal imitator and followed simple one- and two-step instructions. He was able to express basic wants and needs verbally, despite a speech disfluency.

Mark attended a public school program for learners with severe and profound handicapping conditions and resided in an intermediate care facility for the mentally retarded. He received daily training in vocational, community, domestic, and leisure skills, both in natural environments and the classroom setting. Although photography was identified as an interest of Mark’s, he had had minimal exposure to it. Prior to the initiation of the program described herein, he had received no training in any basic photography skills.

Settings and Materials

Sessions were conducted in a public school classroom and on the school grounds. Additional sessions occurred at the learner’s place of residence, both indoors and outdoors.

Real materials were used exclusively during probe sessions. These included a Polaroid One-Step camera, one used and one new pack of SX-70 film, a used and a usable flash bar, a pencil, and a decision cue card.

The decision cue card was attached to the camera’s underside. It was divided into 10 horizontal segments, each of which contained three columns. Each space in the left column included a stick figure of a person, to represent familiar people. Each space in the right column included a line drawing of a landscape, to represent scenery. The middle column spaces remained blank, to represent absence of familiar people and/or scenery. The categories were chosen based on a survey that asked 30 randomly selected adults who owned cameras what they photographed most frequently. Answers categorized as “familiar people” were the most common, followed closely in number by those categorized as “scenery.” No other category of photo subject was named more than twice.

Simulated materials were used during training, with the exception of a usable and a used flash bar, a pencil, and a decision cue card. Other materials included life-sized, cardboard replicas of a Polaroid One-Step camera and one new and one used SX-70 film pack. Two 8” × 10” color magazine photos represented indoor and outdoor settings in Phase II. Six color photos from each of the categories familiar people, scenery, and neither simulated various settings and photo subjects in Phases III and IV. Plastic-coated photocopies of the photographs from the familiar people and scenery categories simulated photos produced by the simulated camera in Phase IV.

Probe Procedures

Probe sessions occurred on an average of twice weekly over a 6-month period. During each of the four phases, the learner was given an initial verbal cue and access to needed materials, following which he was given 5 seconds to initiate the first step of the delineated task analysis and 3 seconds to initiate each subsequent step after completion of the previous one. Each correct response was recorded as a plus (+) on the corresponding task analytic data sheet until the first incorrect response occurred. At that time, the probe on that phase was discontinued by removing all of the materials while saying, “Thanks, Mark. That’s all for now.” The first incorrectly performed step, as well as all subsequent steps in the phase, were recorded as minuses (−). No reinforcement was provided under probe conditions.

Probes occurred initially across all phases until stability was established. When intervention on a phase began, probes were continually administered on that phase until the criterion of 100% correct was attained under probe conditions for four consecutive sessions, which included proficiency on all branches of the probe. When criterion was realized, intervention was discontinued. Probing across all phases was reinstated to reestablish baselines prior to training on the subsequent phase. A single probe per phase was conducted immediately preceding a training session. Probes measured generalization effects during training and
supplied maintenance data after training had ceased. Following is a description of what occurred during the various phases, using these general probe procedures.

In Phase I (loading film into the camera) the learner as probed on two branches. During both, the trainer presented the camera with the lens facing the learner. A new film pack was placed next to the camera, within 3 inches. The trainer gained the learner’s eye contact and said, “Is the camera loaded?” The learner was then expected to turn the camera to look at the number indicator on the back. The indicator was preset either so that any number from 1 through 10 appeared, or so no number at all appeared, which meant that there was no film in the camera. If any number appeared on the indicator, the learner was expected to say “Film’s OK” and set the camera down. When the indicator was blank, the learner was expected to open the camera’s film compartment, remove the used film cartridge, open the new film pack, load the new film in the camera, and close the film compartment. For one-third of the probes, the indicator was preset at a number, while for those remaining it was preset to blank. Presetting was accomplished in Phases I, II, and III by putting a used cartridge in the camera and depressing the shutter button to change the numbers.

In Phase II (checking the flash attachment) the film-ready camera was presented as in Phase I. A usable flash bar was placed on one side of the camera, while an unusable flash was placed on the opposite side. The location of the flash bars was systematically varied to avoid position bias. A third of the probes occurred outdoors, while the remaining ones occurred indoors. When indoors, and given the cue “Check the flash,” the learner was expected to pick up the usable flash and correctly attach it to the camera. When given the same cue and materials arrangement outdoors, the learner was expected to say “No flash outside,” while leaving the flash alone.

Phase III (deciding what to photograph) depended upon a contrived format, the decision cue card, to measure a process that typically would occur without an observable behavior. In this phase the camera was prepared with film and flash. When asked, “What do you want to take a picture of?” the learner was expected to scan his surroundings, which included indoor and outdoor settings, look at the decision cue card, and circle one of the three representations (i.e., familiar people, scenery, or neither). If familiar people or scenery was circled, he was expected to turn the camera right side up and point the lens in a direct line with the proposed photo subject. In this way, the trainer could observe congruence between the circled representation and the proposed photo subject. If the learner circled the empty box, meaning no familiar people or scenery were in the area he wished to photograph, he was expected to put the camera down.

Having prepared for Phase IV (taking a photograph) by readying the film and flash, as well as making a decision about what was to be photographed, the learner was told, “You are ready to take a picture.” The learner was first expected to hold the camera correctly by supporting it from the bottom with his left hand, leaving his right hand free to maneuver the camera and activate the shutter. He was then to raise the camera to his face level, match his preferred eye to the viewfinder, point the camera at a preselected subject, press the shutter button, bring the camera to mid-chest level, and remove the partially ejected photograph.

Training Procedures
Training sessions occurred immediately following probes. The trainers, who were the writer and another special education teacher, preceded each five-trial training session by explaining to the learner that he was going to practice using the pretend camera. Training sessions were conducted using the same materials arrangement, task analyses, initial discriminative stimuli, and randomization of branches used during probe sessions. Unlike the probe procedure, training consisted of simultaneous instruction on all steps in a given phase.

Correct responding was congealed by social praise that included a restatement of what the learner did correctly (e.g., “Great job, Mark! The indicator was blank, so you opened the camera!”). Correct responses were recorded as plusses (+) on the training data sheet. When fewer than 50% of the steps on the immediately preceding probe were performed correctly, the learner received verbal reinforcement on an average of every two steps (VR–2) during training. When the rate of correct responding rose to 50% or above for two consecutive probes, reinforcement during training was subsequently thinned to an average of every four steps (VR–4). When probes reached 100% correct for two consecutive days, reinforcement during the subsequent training session was withheld until completion of the entire phase sequence.

If the learner responded incorrectly, either by not initiating correct behavior within the previously stated time latencies or by incorrectly performing the step, a least-to-most intrusive prompting hierarchy was instituted. The steps taken were to interrupt the mistake, back up to and point out the naturally occurring discriminative stimuli for that step, and immediately provide a prompt. For example, during Phase I if the learner began the sequence correctly by turning the camera around but continued by turning a knob on the front of the camera, the trainer interrupted by saying “Stop” while simultaneously removing the camera from the learner’s hands. The camera was then positioned as it was after the correct completion of the previous step, with the number indicator facing the learner. The relevant discriminative stimulus was then brought to the learner’s attention (e.g., “See, the number indicator is blank,” while pointing at the in-

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A verbal direction immediately followed (e.g., "Open the camera"). If the learner was successful with the verbal prompt, it was recorded as a V. If unsuccessful at this level, increasingly more intrusive prompts were employed until the learner correctly followed the relevant cue with the appropriate response. Remaining prompt levels included gesturing, modeling, and physical guidance which were recorded as G, M, and P, respectively. These prompt levels were accompanied by a simultaneous verbal direction.

Training was discontinued after the probe criterion for that phase had been attained. Training was re-introduced if two consecutive posttraining probes fell below criterion. Retraining continued until criterion was re-established.

To assist the learner in making the connection between the simulated materials and the real materials, verbal input referring to this relationship was supplied. During the introduction to a session, attention was called to the fact that practice with the simulated camera was done so that the learner would know how to use the real camera. After a session, the learner was reminded of the purpose of training by saying, for example, "Mark, remember what we did with the pretend camera today, because you do the same thing when you use the real camera."

The aforementioned training procedures were used across all phases. In Phase I (loading film in the camera) this was accomplished by merely substituting the simulated camera and film cartridge for the real ones. The following describes specific components unique to remaining phases.

During Phase II (checking the flash attachment), sessions occurred indoors. Depending upon the branch being trained during a particular trial, the indoor or outdoor simulation card was displayed in front of the learner and identified. He was then told, for example, "Let's pretend that you're outside. Check the flash."

In Phase III (deciding what to photograph), the learner was told that the film and the flash were ready. He was then presented with a color photograph representing one of the three decision categories (i.e., familiar people, scenery, neither). These photos were systematically varied to include indoor and outdoor examples of each category. The trainer then explained how the displayed photo was to be used (e.g., "Let's pretend that this is what you see. It's your friend, John, outside"). The learner was then asked, "What do you want to take a picture of?" He was expected to respond accordingly, using the decision cue card. The simulated subjects were positioned in varying locations to avoid position bias when the learner's anticipated response was to aim the camera lens in a direct line with the simulated subject.

In Phase IV (taking a photograph), photographs from the familiar people and scenery categories were displayed as described in Phase III. A photocopy corresponding to the photo being displayed during the trial was inserted, face up, into a horizontal slot in the simulated camera. This slot paralleled the slot on the real camera where photos were partially ejected after the shutter button was depressed. Enough of the inserted photocopy remained outside of the camera body to be grasped. The learner was informed, "You're ready to take a picture."

The sequence culminated with the learner removing a simulated photo from the simulated camera.

**Experimental Design**

A multiple-probe technique (Horner & Baer, 1978) was used to demonstrate experimental control. This design was selected to avoid subjecting the learner to frequent failure during an ongoing baseline on tasks with which he had little prior experience.

**Reliability**

Classroom and ICF/MR staff recorded interobserver reliability during probe sessions at least twice in each experimental condition. Given an unobstructed view of the learner's activity, the trainer and independent observer simultaneously watched and recorded the learner's behavior on separate task analytic data sheets. Using a step-by-step comparison, the reliability results were calculated for each phase by dividing the number of agreements by the total number of steps in a phase and multiplying by 100.

**Results**

As depicted in Figure 1, the learner acquired the ability to load film in the camera, check the flash attachment, decide what to photograph, and take a photograph. Interobserver reliability checks during probes were calculated at 100% agreement on every occasion.

During Phase I (loading film in the camera), the learner achieved the 100% correct level within six sessions (30 trials) using the simulated materials. Subsequent training sessions remained at or near 100%. Corresponding probes showed variability within an ascending trend. After 19 sessions (95 trials) the learner reached criterion. Criterion level was maintained for approximately 2.5 months, with the exception of two consecutive probes that fell below criterion.

Phase II (checking the flash attachment) was characterized by variability depicted during the initial baseline, with scores ranging from 33% correct to 100%. The re-established baseline ranged from 33% to 50% correct. The learner reached criterion on probes following five training sessions (25 trials). Subsequent maintenance probes conducted over a period of approximately 6 weeks remained at the level of 100% correct.

Initial and re-established baselines during Phase III (deciding what to photograph) remained at the 25% correct level. Following 10 training sessions (50 trials), the learner achieved the probe criterion. Maintenance
probes conducted over approximately 1 month remained at 100%.

Initial and reestablished baseline probes during Phase IV (taking a photograph) remained unchanged at the level of 0% correct. The learner reached probe criterion following six training sessions (30 trials). Maintenance probes conducted over approximately 3 weeks remained at 100%. Of the 10 photos actually taken by the learner, all were centered; while two of those were blurry, the remaining eight were clear.

Discussion

The number of training sessions necessary to attain criterion during Phase I was more than double that needed in any other phase. The writer attributes this phenomenon to a combination of factors. Task difficulty and branch discriminations varied from phase to phase. During Phase I, the density of training was significantly less than during other phases, primarily due to Mark's frequent absence from school. Third,
it was hypothesized that during the initial phase Mark was in the process of learning the relationship between the simulated and real materials. While he learned how to use the simulated materials quickly, it took him several weeks to generalize what he had learned to the real materials. During the remaining phases, increasing covariation was noted between training (simulated materials) and probe (real materials) sessions. Successful maintenance of the learned sequences is attributed primarily to the reinforcing value of the activity itself to the learner, aided by the use of increasingly intermittent schedules of reinforcement.

This program provided the learner with only basic skills necessary for partial independence with an instant camera. It should be considered the beginning of an ongoing program that may include areas such as deciding when to initiate photo taking, how to approach potential photo subjects in a socially appropriate manner, expanded options of photo subjects beyond familiar people and scenery, and purchasing supplies at a store. While Mark has much to learn in order to use a camera responsibly and in a totally independent fashion, he has gained sufficient skill at his new hobby to allow a noticeable measure of success and enjoyment.

A pertinent question raised through the design of this study was the viability of using simulation to train basic photography skills. Questions must be asked regarding the purpose of the simulation and its potential benefits within the framework of its proposed usage. Only a thorough analysis of this type will allow a program designer to construct a defensible rationale for using simulated materials. In the case of this study, cost was a major consideration in favor of simulation. Wear and tear on a real camera, as well as, film cost would have made the program expensive. The simulated camera and other training materials took approximately 10 hours to construct. They were made exclusively of scrap materials found at home or at school. Since labor time is one form of cost, it is advisable to build materials that are durable enough to be reused. This initial investment may pay for itself if the materials are used over an extended period of time, reused to teach other students, or used in teaching a group of students. In these times of hypersensitive cost-consciousness, caution must be taken to not allow cost and convenience to override our decision-making processes by placing a disproportionate emphasis on these factors. These factors must be viewed in perspective, along with the needs of the learner, his characteristics, and available resources. For example, if the learning history of the student has been marked by extreme difficuly in generalizing despite systematic intervention, then it may be more appropriate to use real materials. Since deciding whether to simulate will depend ultimately upon a professional judgment, it remains the responsibility of those making that judgment to provide a defensible rationale for its use.

If a decision is made to simulate, the teacher is then faced with the questions of what to simulate and at what level of abstraction. In this case, it was determined that some materials need not be simulated. The used and usable flash bars were employed throughout probe and training sessions because they were readily available, reusable, and not prone to wear. Conversely, the camera itself was simulated to allow repeated practice while avoiding wear on the actual camera and exposure of large quantities of film. Although the level of simulation selected will vary based on the characteristics of the learner, in this case the writer successfully simulated the materials that needed to be manipulated by using life-size replicas, while those that were designed to set the scene (such as indoors or outdoors) were simulated on a more abstract level by using photographs. While the notion of training in the natural environment and the use of real materials is a valid and important concept, it is recommended that teachers of the severely handicapped remain open-minded enough so that they do not use that concept to the exclusion of all others.

A second question posed by the design of this study relates to generalization effects when simulated materials are used for applied purposes. It is the author’s contention that a portion of severely handicapped learners display limited generalization across settings, materials, and people simply because we fail to assist them in making these crucial connections. For some learners it may be sufficient to tell them in a straightforward manner what the relationship is, or that they are expected to do a certain task under different specified conditions. Otherwise, they may not realize that one activity has anything to do with another, particularly if there is an extended latency between the two activities. This consideration remains crucial to any program using simulation, since such programs are of questionable value unless generalization occurs.

The methodology and rationales included in this article provide a viable framework for teaching basic photography skills. While the relationship between simulation and generalization continues to be studied, direct-service providers may continue to extend their efforts beyond the training of skills essential for existence to include the social and recreational endeavors our culture considers an integral component of a fulfilled life.
References


Footnotes

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Task analyses referred to herein may be obtained by contacting the writer, c/o Tompkins-Seneca-Tioga Board of Cooperative Educational Services, 555 Warren Road, Ithaca, NY 14850.