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ABSTRACT

This document outlines a method of identifying children in need of remedial instruction and gives a detailed description of how paraprofessional school personnel should carry out this remedial instruction. The identification of children needing remedial instruction is made by means of tests given in kindergarten or first grade. These tests differentiate between weakness in learning skills and lack of background knowledge due to cultural deprivation. Remedial instruction is felt to be most appropriate for children with slight weakness in learning skills or for those with intact learning skills who are culturally deprived. Serious deficiencies in learning skills are to be referred to specialists. The section on teaching methods for paraprofessionals tells them how to select appropriate items for drill from commercially-produced flash cards and how to conduct the drill with the child in order to maximize positive reinforcement and motivation for learning. (RT)

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TRAINING PARAPROFESSIONALS FOR INTENSIVE SKILL BUILDING IN AN EARLY DETECTION AND INTERVENTION PROGRAM *

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As the role of the paraprofessional, or teacher aide, becomes more widely accepted, questions arise as to which tasks they can successfully engage in, and how to use them in the most efficient way possible. It is clear that they are not sufficiently trained to venture unprepared into instructional areas, and most early writing in the field has assigned them roles which are custodial, involve social interactions with minimal instructional objectives, or permit the completion of teacher duties at a minimal skill level (Ferver & Cook, 1968). However, many disadvantaged or selectively handicapped children need intensive assistance in skill-deficient areas. Effective one-to-one contact seems to hold considerable promise for achieving the goal of rapid improvement in narrow skill areas. Since the teacher will rarely be available for one-to-one drill, if the paraprofessionals could be rapidly and effectively trained to assist in narrow areas of remediation, their scope could be greatly enlarged.

During the last two years, in a small semi-rural community in Wisconsin, we have been working to develop techniques which allow paraprofessionals to function increasingly as supportive instructors backing up the education of children in kindergarten and first grade. The approach involves a strong influence from techniques of behavior modification, and the effort has been to combine maximal effectiveness in the choice of curriculum materials together with optimal reinforcing approaches for developing high levels of involvement by the child. In sum, the intent is to accomplish rapid and intensive rote trials of an associative or serial nature, commonly called drill, yet vary the situation in such a way that a sense of positive involvement and achievement is maintained by the child. Although community mothers were used in this project the specific techniques are seen as appropriate for any group of paraprofessionals, including

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parents and children in higher grades. A description of the kinds of persons who make effective paraprofesisonals is beyond the scope of this article, but the movement obviously introduces selection problems which must be carefully considered and solved before we can realize fully the greatly promising potential for using them (Guerney, 1969).

Importance of rote learning in the primary grades

The complexities of the learning process in the classroom continues to defy easy description. From a laboratory point of view, names have been given to numerous different kinds of learning. Few attempts have been made, however, to relate the relatively complex ingredients of the everyday classroom to the much more precisely controlled forms of learning investigated by basic researchers. Despite this continuing wide breach, some valid observations can be made. Certain forms of learning require less of a contribution by the student between stimulus and expected response. Associative learning simply requires a person to acquire associations between two units and to be able to spontaneously recall one unit when the other is presented. Names of animals and people are simple examples. Serial learning involves being able to repeat a chain of associations where the first leads to the second, the second to the third, and so on in a single correct order. A laboratory example is the repetition of number series, and classroom examples are learning the alphabet in sequence or the words to a song. Neither form of learning requires the child to spontaneously reorganize old learning into a new format.

Although associative and serial learning are assumed to become increasingly less important in later grades, in the primary grades a great deal of the hard core curriculum involves simple recollections of visual-verbal associations. Learning the names of colors, remembering letters and words, learning word attack skills, learning addition, subtraction and multiplication rules, learning the Pledge of Allegience, are all examples of such rote level of learning. More abstract forms of learning, requiring an intervening contribution by the child

and more flexibility in the kinds of acceptable responses, are certainly present in the primary grades, but the relatively greater emphasis on rote learning requires that initial efforts center on this primary level of learning. The technqiues to be reported here are applicable for either of these basically similar kinds of learning.

Readiness skills in relationship to effective rote learning

With regard to the child usually identified as requiring this kind of supplementary drill, not only are they usually unable to spontaneously rehearse the number of trials needed to retain a new association, but they usually see little importance in the activity. Thus, two of the so-called readiness skills required in a school child for effective rote learning are the idea of accepting the importance of this rote information and the habit of engaging in rehearsal up to the point of adequate mastery. In certain cases a class of rote learning must be so overlearned that they are never forgotten. Whereas much of the rote learning in later grades is of a kind which need not be remembered beyond an exam or short-term learning objective, the rote learning in the primary grades is frequently so fundamental that overlearning for purposes of long-term retention is necessary. Although primary grade teachers provide frequent trials for such necessary information, where drill is not naturally easy or enjoyable for a child then it is necessary to attend just as much to creating a climate of effective reinforcement for training on these skills as it is to selecting the appropriate content for the learning trials.

This general focus upon effective rote learning processes is seen as only one link in a chain which begins with minimal individual behavior repertoires in several areas and which ends with a process of self-initiated learning of various kinds. The ultimate objective is to establish learning skills which encourage a child to seek new information of various kinds, effectively store it, reorganize it into new patterns of knowledge, develop effective retrieval skills, and then apply it in an increasingly effective way to the solution of meaningful

problems. Rote learning is a necessary pre-requisite to "learning how to learn" in a personally meaningful way.

Selecting the children for supplementary drill

Teacher judgment plus group and individual screening techniques are used to select children for one-to-one skill building. In general, the group and individual instruments supplement the teacher judgement, but both are needed. A child who is hard working may seem adequately functioning to the teacher, whereas important skill deficiencies may be slowing his speed and effectiveness of mastery. On the other hand, a child who is able to perform satisfactorily under group and individual assessment conditions may be variable in classroom performance due to indifference to the general process of learning.

Diagnostic instruments are in continual process of selection and construction. Each year new instruments are added to the detection battery, in order to compare their value against the increasingly interpretable value of instruments in use. Over a four year period a rather effective and efficient screening battery and a partially effective diagnostic battery have been established at the first grade level. In addition to an 85 item teacher inventory which breaks various behavior patterns into specific behavioral sequences (Severson & Kaplan, 1968), children are currently assessed on the following instruments in kindergarten and first grade. In the spring, at pre-kindergarten enrollment, each child is individually tested on a school readiness inventory (Massey & Jordan, 1968) by community volunteers, and the parents complete a form describing specific child behaviors and school-related attitudes of both parents and child. In the first month of kindergarten children receive an individual vocabulary test (Jastak & Jastak, 1963), which is an improved version of the Vocabulary subtest of the Wechsler Intelligence Scale for Children (Wechsler, 1949). This not only gives a relatively useful measure of general ability, but it also allows the examiner to note several additional behavioral features, such as the child's capacity to understand and use oral language, the reaction to one-to-one testing

situations, and the general fearfulness of the child. Kindergarten children also complete a picture drawing test which is designed to be a global assessment of personality and visuomotor functioning (Koppitz, 1969).

Diagnostic procedures at this point in time are more extensively developed for first grade level. In addition to the Jastak vocabulary test, each child receives an individual measure of auditory discrimination (Wepman, 1969), auditory memory (Benton & Blackburn, 1959), visuoperceptual memory (specially created within this system), and a pretest showing knowledge of alphabet plus simple arithmetic skills. These tests are given approximately one month after the start of school by the paraprofessionals and school psychologists, and require approximately 30 minutes of individual testing. In addition, auditory and visual acuity are checked using conventional screening techniques, and visual discrimination is examined through group administration of the Developmental Test of Visual-Motor Integration (VMI) (Beery, 1967). An assessment of writing skills (duplication of letters and words),plus the Human Figure Drawing, completes the screening battery.

These beginning scores allow for a fairly detailed picture of each child's initial skill patterns, although it is recognized that only an extended assessment of possibly 50 variables would permit the kinds of detailed description necessary for optimal engineering of the learning process. In the process of assembling useful diagnostic tests it is worth noting that many popular tests have been abandoned (such as most of the subtests of the individually administered IQ tests), and other well-known tests seem duplicative of more efficient ways of getting the same information (such as the Frostig Developmental Test of Visual Perception and the Illinois Test of Psycholinguistic Abilities).

This pattern of scores is added to existing information, such as readiness scores (Metropolitan Readiness Test), kindergarten teacher judgment, and a global rating of performance by the first grade teacher after one month of school. A picture is obtained not only of those children needing intensive

readiness training beyond general class preparation, but it is possible to define with considerable accuracy the area where the child is most weak in knowledge or basic learning and retention skills.

Several questions still remain for those children selected, but these are generally answered during the actual contact of the paraprofessional with the child after starting skill building. These involve such things as the child's actual capacity to acquire and maintain units of new material, the general enthusiasm of the child in response to successful learning, and the existence of a capacity to relate positively to the paraprofessional. Where any of these are deficient, more extended diagnostic procedures are employed by the school psychologist. These involve a variety of techniques ranging from assessment of additional skills (such as intersensory integration and paired associate learning using various sensory modalities) to an investigation of the interpersonal and intropsychic adjustment of the child. Children manifesting more severe behavioral or emotional problems, or serious sensory defects, are identified to the parents as being in need of assistance by specialists. It should be noted that parents are given the first opportunity to work with their own child and paraprofessionals are used only for children where the parent cannot find sufficient time or cannot effectively reverse the situation by themselves. We do not yet have sufficient information concerning the effectiveness of parental involvement as this phase of the program is just beginning.

Establishing beginning levels of skill building

Although having some idea of general ability, acuity, discrimination skills and memory helps in determining important acquisition and/or retention impairments of the child, non of these necessarily relate to the child's actual placement in the curriculum sequence. This is because of the existence of too many additional factors affecting the extent of learning during the first five years. A child may come from a family with strong emphasis on school achievement and he may successfully compensate for moderate impairments in areas of basic learning skills

through frequent exposure to academically related material together with highly effective reinforcement. Numerous other characteristics may allow a child to compensate for apparent learning (acquisition) deficiencies, such as characteristic persistence, marked concern over succeeding which leads to extensive effort, and numerous other behavior patterns or environmental experiences about which we have little current knowledge.

In contrast to this generally compensatory pattern, which has been studied very little, there is the child who presents intact learning skills but because of a comparative underemphasis on academic learning in the home there may be serious gaps in specific knowledge of curriculum sequences. These children have received considerable attention in recent years and the discrepancy between curriculum content and intact learning skills may present the most operational definition of "culturally disadvantaged" children currently available. Of course, children called "culturally disadvantaged" may also include those who not only have failed to be exposed to curriculum-related processes and reinforced for interest in them, but who also lack the more basic learning and retention skills.

However, if a child shows important impairment not only in knowledge of curriculum skills required as background for new learning, but also in the ability to acquire and retain new knowledge at an appropriate level of difficulty for that person, there seems to be little reason to selectively emphasize the cultural disadvantagement aspect. That is, missing experiences alone will not rapidly reduce the deficiencies, and one is dealing with a child more frequently called mentally retarded. Failure to make this distinction has probably doomed many preschool enrichment programs to limited success with many of the children included. Thus, teaching strategy will be affected by comparative standing on a pre-test of achievement as well as on tests of actual learning and retention skills. Since both of these are reflected in an IQ test, the prescriptive failure of the IQ test lies in its limited ability to separate these elements in the most powerful way available.

Recognizing the need to better establish actual placement of the child in a sequenced curriculum, the first approach involves both the general observation of learning and performance skills by the teacher in the early weeks of school, but also a group curriculum pre-test which presents items drawn from the actual curriculum materials. When children are identified who are failing to make satisfactory progress in the early weeks, or who show significant lags of specific knowledge in important curriculum areas, assessment is continued on a one-to-one basis in order to establish beginning levels of teaching.

The tactic during this individualized assessment is to move backwards through the curriculum with progressively more easy items until a level is found where the child demonstrates mastery. Since any level of the curriculum is based upon an integration of various underlying skills, points are reached in moving backwards through the hierarchy where it is necessary to branch off into two or more subskills. As Beery (1967) has aptly demonstrated in a model designed to "assess down and teach up", such a task as copying visual forms can be made progressively easier, first by having the examiner demonstrate the task before asking the child to do it himself. If failure to draw adequately is still found, the next step is to have the child trace the figures. If significant impairment is still found, the next assessment involves tasks of more purely perceptual or motor skills.

Insert Figure 1 here

Such areas as beginning knowledge of letters and basic words, simple number concepts, and basic drawing skills represent the most important initial target behaviors. With severely impaired children at the first grade level, individual assessment may proceed backwards into kindergarten target behaviors such as knowledge of colors and basic shapes, concepts such as top-bottom; inside of-outside of, and so on. Thus, an initial prescription of where to begin may

place the child anywhere from slightly below current classroom levels, or end up with a rather large list of underlying deficiencies. The more discrepant the degree of mastery from current levels of classroom functioning, the more arbitrary is the specific area selected for initial mastery, but without some initial screening in this area one might waste considerable time finding out the child is unable to learn and retain at levels higher than his actual knowledge. In general, the first selection of tasks for skill building consists of curriculum content at a level of difficulty just above what the child has already mastered. More fundamental basic learning and retention skills are only selected for direct training if the child is unable to make satisfactory progress in learning units of the actual curriculum. This strategy underscores an important point. Where children are consistently low in all areas, the probability of maintaining them in a regular classroom is considerably lowered, although not completely impossible. The paraprofessionals achieve their greatest effectiveness with children who have spotty curriculum mastery, or narrow and mild deficiencies in learning skills.

The process of group and individual diagnosis requires careful monitoring by a reading specialist and/or a school psychologist thoroughly familiar with the curriculum being used. Not only must the paraprofessionals be well trained in objective administration and scoring of the tasks given individually, but exceptional situations must be detected with regard to individual children. An occasional child may be unduly constricted due to fear reactions which impair functioning under unusual situations. Other children may present unusual patterns of functioning which require more extensive clinical diagnosis. However, only a small fraction of children will be unable to function effectively when the previously described group and individual assessment program is completed, and individual patterns of remediation are instituted. Assuming the appropriate screening assessment has taken place, and unusual patterns of development

have been identified, remedial procedures can be undertaken by paraprofessionals with considerable confidence. The following instructions seem to be sufficient to equip paraprofessionals with the skills necessary to successfully pursue one-to-one skill building with occasional supervision

Selection items for drill

Drill series work best when a sample of materials can be obtained which cover a range of easy to hard items, and where the child knows at least part of the material. For example, a common series consists of vocabulary words. One item is put on each card. If the series involves something where a picture clue can assist the child in getting the word, stimulus materials are preferred where one side has the word and the other side has the word plus a picture clue. Most of the time these materials are available in acceptable form from such companies as Milton Bradley or Kenworthy. In the case of spelling, the picture side without the word is the "hard" side and the "easy " side consists of a top part with the whole word and a bottom side with the word spread out. The gradations of stimulus complexity become important in the skill building drill.

Once having a series of cards, go through the deck with the child with the objective of sorting the cards into two piles of known and unknown items. It is important to have two such piles before beginning the drill. If the child knows no items from the present pile, one should choose a few items from a different pile where the child knows the correct response. For example, if learning letters of the alphabet is the objective, and the child knows none of either the capital or small letters, a few cards with colors, or pictures of objects, can be employed as the known material, providing it is clearly established that the child can give an invariantly correct answer when asked to identify the content. The initial guideline is to achieve two piles of five cards, one where the child has demonstrated two successive trials of correct response and one where the child has twice failed to give the correct response.

While first testing the child as a way of getting these materials, it is very important to watch the child's behavior closely. One of the most important non-ability characteristics which affects school learning is the child's response to success and failure. Watch carefully to see how the child reacts when he runs into items where he does not know the answer. The general tolerance of a series of failure trials will determine if you should start with a larger or smaller pile of unknown items. Many children cannot tolerate more than two trials in a row of failure, even where failure consists simply of being told "no" in a benign way, followed by the correct reply, or a shift to presentation of the material in a less difficult way. Obviously, such children must not only learn new skills, but they need considerable training in increasing the confidence they bring to the relatively more complex classroom.

Because of the frequent uncomfortableness surrounding failure during this diagnostic phase, be as objective as possible in determining what the child knowns, but minimize concern on the part of the child by giving reassurance whenever necessary. The following kind of introduction to the task is usually sufficient: "We want to find out which of these you know and which you don't know. Then we can begin to learn the ones you don't know. Tell me right away what you think it is, and don't worry about making mistakes. We'll know all of them pretty soon." Present the first item and ask the child, "What is this letter? Yes, that's a ___, and we'll put it in this pile. (Or) No, that's a ____, and we'll put it on this side. What is this one?" Then proceed through a pile which may include the whole alphabet, or a pile of 50 words, if the child can tolerate this much testing easily. At frequent intervals give positive verbal reinforcement when the child gets the items correct. If the child knows very few of the items, praise the child for his cooperativeness or effort. For example, "These are very hard items but you certainly are doing very well." If the child still reacts to several items with obvious blocking or apprehension self-criticism, either add verbal reassurance, put in some easier material

as a spacer, or stop the task temporarily. Keep notes after each session on both the items known and unknown, together with a description of the degree of eagerness to learn, personal tolerance of failure, pleasure over success, and other important aspects of the child's behavior.

How to drill

Once having selected the materials, use the following procedures for teaching,

1. Start with five of the unknown pile and ask the child "What is this letter (word)?", or "How is baby spelled?", or any similarly appropriate prompt. Aviod items with very difficult discriminations, such as b and d at the early stages. If the child gets the item correctly the first time, say "Good!" and go on to the next word. If the child gets it wrong, avoid saying that's not right, or any response which intensifies the negative feedback. Usually, one can say no very softly, followed by immediate feedback of the correct answer. "No, this one is g." Do not use the word no on every trial, since often a simple correction is sufficient. The importance of avoiding negative feedback, and adding reinforcement for any effort, will depend on the child's pattern of responding to failure experiences. If the other side of the card has an easier prompt, such as a picture accompanying a word, simply turn the card over and provide the additional cue when the child misses on the first trial. Only after missing twice is a correction given. Sometimes it is possible to continue to move backwards and provide an additional prompt short of the actual answer. Thus, one seeks to provide a situation where the child can still successfully provide an answer and receive reinforcement for responding correctly. If it has been necessary to provide additional prompts, or to give the correct answer after exhausting the prompts, immediately show the child the front of the card again and ask for a repeat of the correct answer. This is an immediate rehearsal trial under conditions of highest probable success. If he gives the answer correctly this time, say "Yes!",

and go on to the next word. If he still fails to give a correct response, repeat the correct answer without further prompts and then ask him to provide it. Say "Yes" following a correct response, but do not say it as emphatically if more than one trial is needed. This difference helps to shape greater effort to achieve first trial correct responding in most children.

2. It is important to keep an exact record of responses by the child. A simple log sheet can be made which shows specific items of the drill down the left side, and trials along the top. Keep a continuous record by marking a successful first response with a 1. If prompts are used, a 2 can indicate successful response after one prompt and a 3 a successful response following two prompts. Failures need not be marked. The importance of this log is in plotting both how rapidly he learns the material, and which items seemed to provide difficulty. Ideally, not only should records be dated and kept cumulatively, but starting and stopping times should be recorded. This allows conversion of the information to a rate measure, and learning rate is the single most useful index as to how the child is responding to school over time.

3. After completion of the first trial, shuffle the cards once and go through them again in the same way. Continue the process as long as the child is making cumulative progress, as defined by improvement in correct responding with less prompts than required in the previous run-through. If a stage is reached where a plateau is observed, it is important to modify the procedure. A single item or two may prove to be unusually difficult and the child will show no improvement over several trials. Or the child may show visible effects of stress, either by deterioration of general performance or behavioral signs such as increasing agitation, verbal comments suggestive of discomfort, or becoming unusually quiet and non-responsive.

Under these circumstances, make one of the following modifications.

If the child seems bothered by the activity, stop drill procedures and switch to a different activity. This can be a planned rest period, such as going for a drink, taking a short walk outside, talking about an unrelated subject of interest to the child, or similar break. Or if the problem seems less emotional and more one of selective difficulty with one or more of the items, consider one of the following decisions. If the material seems much too difficult for current mastery, replace it with items of less apparent difficulty, or simply cut back to a lesser number of items for the next phase, or spend intensive time on these items alone.

When a single item is not mastered at a comparable rate to other unknown material, usually there is some aspect of it which adds disproportionately to the difficulty level. This is typically due to previous learning, with too many incorrect learning associations, or to a confusing dimension in the item. Only by experience with various modifications can one learn effective strategies for teaching certain material. Such problems as teaching letters with similarity of shape but directional dissimilarity (e.g., b,d.p.q) to a child with no grasp of directionality can be particularly challanging. Consultation with a more experienced educator can usually solve these problems, and add techniques for handling these special problems. It may be that the task will have to be broken down into smaller units of teaching and then integrated, or that the child can be provided with aids which can facilitate memory retention. At any rate, these items must be carefully noted, since failure to master all the items in a sequence will invariably impair later

4. Keep at the above procedure until the child gets all five (or whatever number is started with) in a row without <u>any</u> prompt being necessary. Occasionally a child develops a pattern of having an answer available, but not offering it immediately out of uncertainty. You do not want to react consistently to this pattern with reassurance or encouragement, or it will

become more frequent. Rather, if the pattern persists after initial trials of encouragement, get in the habit of waiting only 5 seconds or so and then providing the right answer and going on to the next item. Under these circumstances try to give additional positive reinforcement to immediate responses. (Right! You answered that one right away !).

5. During these acquisition trials, where the child is learning how to give the right response to the stimulus material, it will be up to you to learn how many pairs the child can master at optimal speed. With some children it will be necessary to reduce the number down to two, and with some children it will be possible to increase the number up to 10. The critical ingredients involve the child's natural approach to new learning (how eager he is to learn and how he reacts to his cumulative success or failure) together with the kinds of selective reactions you give him. If you are neutral in reaction, the child is free to guess as to how you react. If you do not seem distressed by his failure, and are genuinely enthused when he succeeds, you have the opportunity to modify his typical approach to learning in a more constructive direction. The more sophisticated you become with differential reactions, so that you can minimize your potential negative value and maximize your strengthening of his achievement behaviors, the more do you maximize the child's chances of approaching the learning experience with enthusiasm, optimism, and increased probability of mastery. Thus, with any child you should be sensitive to see that the interaction does not allow the child to sink below a level of involvement without destructive self-evaluation (abort! abort!), and seeks to encourage eager participation which is reflected in more rapid responding, a higher level of enthusiasm, increased efficiency of acquisition, and other related behaviors.

6. When the child gets all the items correct, requiring no prompts, say

something like, "You're really doing well. You got them all! Let's see if you can do it again." If he does, say "Excellent! Can you do it again?" Rearrange the order by shuffling the cards and go through them as repidly as possible. At the end of this run-through, say "Very good. You know them so well we'll have to make it a little harder." At this juncture you are shifting from the acquisition phase to that of consolidation of learning through over-learning. This is important because when a child first learns something (or any of us, for that matter), if it is not rehearsed or practiced beyond the first successful response, it may not be available at a later time. In fact, it is disconcerting in teaching to observe that a child who gives a correct response one minute may be unable to do so a minite later! With children not used to learning, it is like the morning dew. We must give due respect to the complexity of learning and be sure to carry the child far enough that the new learning does not evaporate. Since various things other that time affect how long and how well we retain new learning, procedures are necessary for aiding the child in careful retention drills, or rehearsals, of newly learned associations.

The general objective during the rehearsal phase is to "thin out" the percent of times these particular cards are presented to the child, up to a point where the child can remember them over longer and longer time intervals, and with increasing amounts of other mental associations occurring during these intervals. Two principles guide you at this point; you want to introduce other materials which require the child to respond, and you want to speed up the number of times that the child reacts. Over-learning results in quicker responses and more accuracy over time. If a person has to think for some time before giving a rote response, he has not learned very well. With rote material it is important to learn material to the point where the response is not only always correct, but is very rapid. For example, imagine how slowly we would read if we had to stop

and figure out each word, and did not practice our knowledge of words beyond this level.

All of the following procedures give ways of insuring overlearning, while at the same time aiding both in long term retention and enjoyment of the process. Increasing speed of presentation is part of all of these techniques, but is not the primary goal. However, as long as the child seems to be responding with sufficient interest, you should be presenting the materials to the child as rapidly as possible. Another important tactic is to move from one format to another. By shifting the way the material is presented, and by continuing to react in such a way as to reward responding on the part of the child, you keep the child involved. The variations are merely ways of retaining the child's interest and avoiding any idea that such repetitious practice is boring.

A Shuffle and present the cards in a different way. For example, during one trial place them on top of each other, then running from left to right, and then running from top to bottom. Any other modification you think of can be tried. Radical placements may be even more effective, such as placing one card on the floor, one on a window ledge, one up high on a book shelf, and so on. Obviously what you say, and how you react to the child, will be very important aspects bearing on the effectiveness on any of these procedures. They have no merit in themselves, exept as they aid in the retention of interest and promotion of responding and learning on the part of the child.

B. Add an equal number of already overlearned associations to the pile and have the child work to get all of them correct. If the child gets all five newly learned associations when an additional five are added as spacers, then one can add even -more spacers to the next run. If the child seems to respond just as quickly to the new associations as to

those already overlearned, then put the new words in a pile of about 20 other already overlearned items. If the child makes no errors on the new items, and gives the correct response rapidly, it is time to shift to a different activity. It is important to keep up the child's enthusiasm at this level, and the novelty of shifting the card arrangement may not be enough reinforcement to add to social praise in order to sustain involvement. Making a challange out of the activity is one way of maintaining interest. For example you could say: "You got them all correct many times in a row, but now I'm going to really make it hard. I'm going to take (five) more from this pile just to make it hard. You already know these, but can you get all (ten) correct?" If the child does get them all right, you can make it even more challanging by presenting the cards faster and faster.

C. Put the words aside and do another task for a few minutes, perhaps a new unit of a different sort. Then return to the words, saying "I wonder if you can still get these all correct. Do you think you can? Let's see. (If correct). Good! You did it. Let's put them aside again and see if you can still remember them later." At this point you want to make a balance between overexposure to this new material and giving the child a chance to overlearn the material with increasing amounts of time between trials. If your sessions run to 20 minutes, and this new material is learned in the beginning, then if five minutes are spent on the initial acquisition and first overlearning, the items can be presented after a five minutes involvement with different material, and also at the end of the 20 minute session. The material should be presented again at the start of the next session, and if the child retains correct responses, the items can be added to an increasing pile of already known items. If one or more are missed, then the missed items can be added to new items

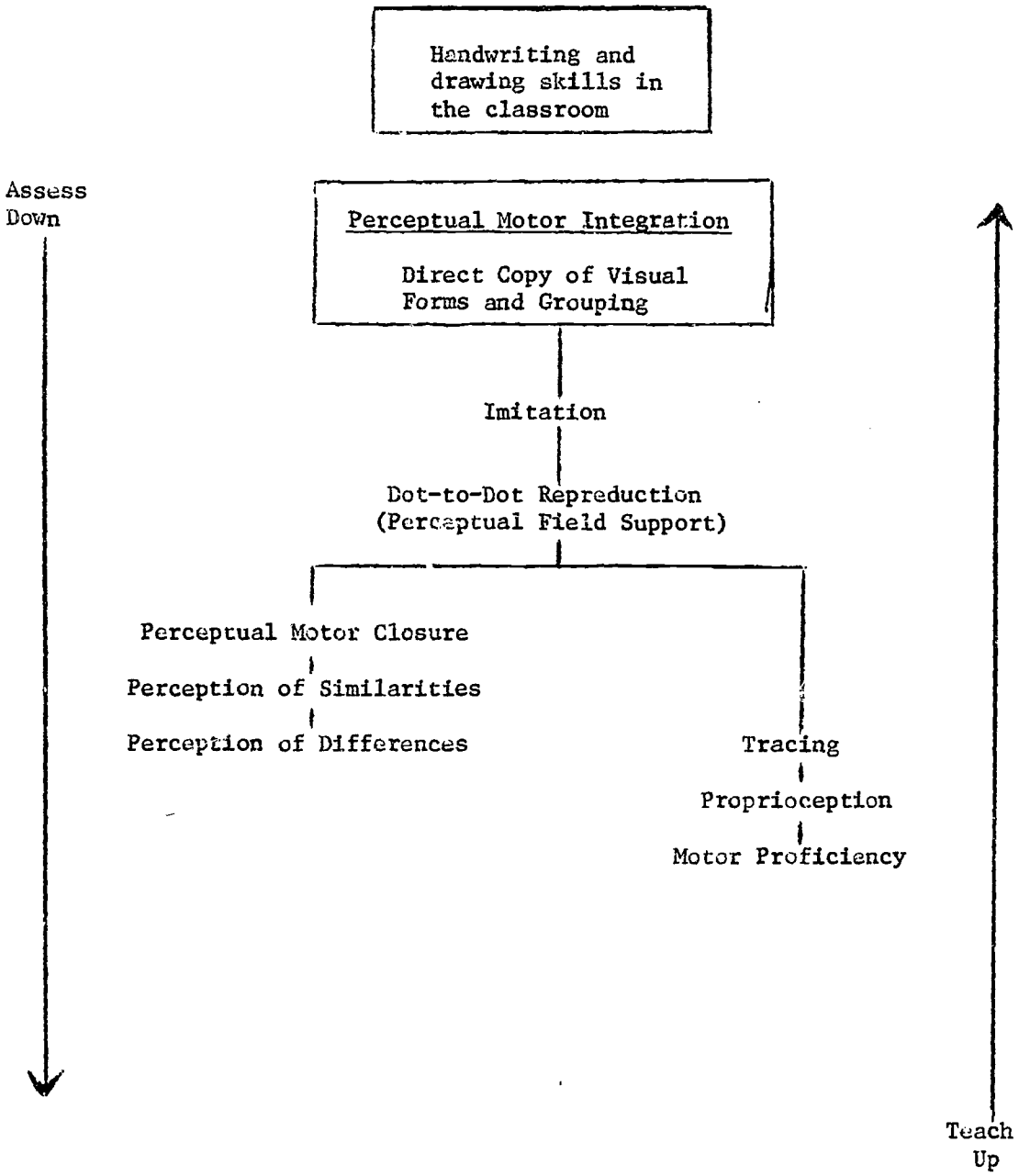
as extras, and dropped when the child seems to have demonstrated mastery.

D. As far as the process of consolidating the associations over time, the cards can be added to a pile of increasing size. One regular activity during subsequent sessions can be to remove a small number of randomly selected cards (the items need not be homogeneous) and present them to the child for rehearsal. Items which are missed should be returned to the pile of new items for an extended exposure to reinforce retention.

E. Since the ultimate goal of all single item associations learned in school is to integrate them into more sequential and meaningful learning activities, try to arrange for activities where the bare associative items are integrated into a longer sequence. For example, where the objective is to drill on words, it is desirable to embed the word into simple sentence formats. At the early stages of the first grade, simple sentences can be constructed for embedding new words. One suggestion involves using two cards with <u>the</u> and <u>is</u>. If either nouns or adjectives are being learned, sentences can be constructed in the following way. Taking the kernel sentence format of The _____ is _____., Either known words or pictures can be added to make various combinations. The words <u>the</u> and <u>is</u> should be among early trials, as well as several other simple pronouns and conjunctives, for the sake of easy sentence building. Pictures, or rebuses, can be used whenever necessary to construct sentences. When pictures are used, the word should be put underneath the picture. The value of this level is to aid the child in recognizing the newly learned words in running contexts of reading. Too infrequently, children learn to deal with a new word in isolation, but by not having practice in actual reading sequences they do not learn how to carry over the learning into meaningful contexts.

Figure 1

Diagnostic procedures with deficits of visual-motor integration
(Adapted from Beery, 1967)



REMEDIATION LOG   Name ______________________________

Target (Note time begin and end).	Date	Trials (Circle first trial with all correct; Put line after stop.) 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	

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