

# Early Identification and Remediation of Learning Problems: The PIRL Project

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Simple Precision Teaching-based probes were used in a regular kindergarten class to identify pupils who might be at risk for demonstrating potentially serious learning problems. Two, one-minute probes were completed with each pupil to assess their performances in six basic skill areas targeted for instruction in the kindergarten curriculum and listed on the kindergarten report card: see-say letter names from ordered and random lists, see-say letter sounds from ordered and random lists, see-write (copy) numbers from a random list, and see-say colors. The probe on see/say letter sounds from a random list proved to discriminate most easily among students who had already mastered the skill and those who had not yet mastered it, so it was selected as the instructional target for a special remedial program. The nine lowest performing students on that skill were provided 15 minutes of small group direct instruction for three days each week over an eleven week period. During the course of the remedial program, six of the students mastered the skill, but three did not. Those students were therefore considered at risk of potentially serious learning problems, and in need of more highly individualized instructional attention. Implications for practice and the continued development of procedures for identifying children in need of more individualized instruction are discussed.

If they are identified as having learning difficulties early in their school years, students might be helped before their problems multiply (Epstein, Kauffman, & Cullinan, 1985; Wallace & Larsen, 1986). The Precise Identification and Remediation for Learning (PIRL) project was established to accomplish this goal of early identification using

procedures that could be implemented easily in a regular education kindergarten.

The PIRL project was conducted in a regular education kindergarten class with 21 students in a suburban school district. The project involved the following seven steps: (1) identification of meaningful assessment targets; (2) development of simple assessment materials for each target skill; (3) initial assessment of pupil performance on each target skill; (4) identification of children with performance deficits on one or more skills; (5) implementation of small-group remedial programs for children displaying initial performance deficits; (6) identification of children failing to benefit from the small-group remedial program; and (7) development and implementation of more individualized programs to promote learning with children who failed to benefit from the small-group remedial program.

### *Target Skill Identification*

Target skills were selected through an examination of the established kindergarten curriculum and the skills listed on the kindergarten report card. Choosing skills that were listed on both of those documents provided assurances that the skills were valued by the school, would be the target of formal instruction, and would be formally assessed.

Six skills were eventually selected to represent a variety of tasks, ranging from those that typically would be mastered before kindergarten (or very early in the year) to those that might not be mastered until rather late in the kindergarten year: see/say letter names from ordered and random lists, see/say letter sounds from ordered and random lists, see/write

(copy) numbers from a random list, and see/say colors.

### *Assessment Materials*

For each target skill, a simple probe was constructed consisting of a single sheet of paper with the appropriate items (i.e., numbers, letters, or color patches) arranged in the proper sequence (randomly or ordered). Space was provided at the top of each sheet for recording the pupil's name, the date, the number of minutes allowed for working on the probe, and the number of correct and incorrect responses made by the pupil during the assessment. An example of one probe is shown in Figure 1.

### *Initial Assessments*

Initial assessments consisted of two 1-minute probes on each of the target skills. Probes were conducted with individual pupils in a room separate from the main classroom. All of a pupil's assessments were completed during a single session, with brief periods of rest between probes. Sessions lasted approximately 15 minutes for each pupil, and they were completed in approximately 5 hours for the entire class.

### *Identification of Children with Performance Deficits*

The best of the two probe results for each pupil on each of the target skills was used in the evaluation of results. The scores for the entire class on any given probe were plotted on a Standard Celeration Chart to determine whether or not any individuals were clearly below the performances of their peers.

One or more pupils did fall noticeably below the rest of the class on each of the target skills. However, variation across class members on the skill of saying letter sounds when presented in random order was much greater than with any of the other skills probed. Some pupils were already fluent, saying their sounds correctly at a rate of more than 50 per minute, while others were still clearly in the acquisition phase of learning, with frequencies of fewer than 20 sounds per minute and equally high error frequencies. It was decided, therefore, to focus attention on that skill.

Specifically, pupils were considered to have a performance deficit if they failed to achieve a minimally fluent performance of 20 correct sounds per minute with 5 or fewer errors on the randomly ordered letter sounds probe. Those criteria were based on suggestions made by White and Haring (1980) regarding the most common transition point between the acquisition and fluency-building phases of learning.

Nine pupils met the performance deficit criteria, with correct frequencies ranging from 1 to 19 and error frequencies ranging as high as 20 per minute on the randomly ordered letter sounds probe. The median correct performance for those nine children was 13.4 per minute, while the median correct performance for the rest of the class was 35.5 per minute. All of the pupils scoring below 20 correct responses per minute on this probe also ranked low on the other probes, with five of the nine pupils consistently at the bottom of the class.

### *Small-Group Remedial Instruction*

A special small-group direct instruction program was established to teach letter sounds to the nine children identified as having a performance deficit in that skill. Two groups were formed, and the following instructional procedures were used:

1. *Modeling.* Each letter was presented visually, combined with a model of the appropriate letter sound. The letter was written on a blackboard, and the instructor pointed to it and its correct phonetic pronunciation. For vowels, the long sound was used.
2. *Guided performance.* Each student tried to pronounce the letter sound while the instructor monitored to ensure correct performance. The instructor would use verbal prompts when necessary to ensure correct pronunciation.
3. *Independent performance.* Students would pronounce the letter sound without prompting from the instructor. This was performed initially as a choral response by the group as a whole and then individually by each student.
4. *Probe.* Following each instructional session, each student was probed individually on the letters that were taught. Probe results

*Figure 1*

# SAMPLE PROBE

Name \_\_\_\_\_ Date \_\_\_\_\_

Letter Sounds  
Random Probe Sheet

Time \_\_\_\_\_ C \_\_\_\_\_ E \_\_\_\_\_

B	D	G	N	C	T	Q	R
Z	W	O	A	M	Y	X	V
E	F	H	K	I	P	L	U
J	T	L	D	A	S	J	F
X	N	C	E	W	Q	G	I
Z	B	Y	H	U	M	O	V
S	K	P	R	L	K	P	U
M	H	X	W	F	D	I	T
C	W	A	Q	F	G	B	D
H	K	J					

were then plotted on the Standard Celeration Chart to evaluate performance and progress.

The letters of the alphabet were divided into three separate groups for instruction. The first set included B, E, C, V, F, W, H, J, and I, the second included Q, K, L, M, P, R, S, and T; and the third included N, G, D, Y, Z, A, U, X, and O. Instructional phases were sequenced in the following manner: (1) the first group of letters was taught; (2) the second group of letters was taught; (3) the first and second group of letters were combined and reviewed together; (4) the third group of letters was taught; and (5) all letters were combined and reviewed together.

Each group was moved from one phase of instruction to the next when most of the group members were saying the letter sounds correctly with a frequency of 50 per minute or better and when all were at least well along in fluency building, with frequencies of 30 or more correct sounds per minute. It was felt that these criteria would place the group firmly within the range demonstrated by their competent peers during the initial assessments.

Instruction for each group was provided by a high school student who volunteered to work in the kindergarten class as part of a district tutoring program. She was trained in direct instruction procedures and was monitored at least twice a week. The small group sessions lasted approximately 15 minutes and took place 3 days a week over an 11-week period.

### *Identifying Pupils with Learning Problems*

Monitoring each pupil's progress on the Standard Celeration Chart made it possible to differentiate clearly between pupils who had no difficulty in acquiring and becoming fluent in saying the letter sounds and those who had difficulty. When both the initial assessments and the instructional probe results were considered, three distinct groups emerged:

1. Children whose initial frequencies indicated that the skill had already been learned and brought to a reasonable level of fluency without need for special instruction after the initial assessment. Of the class of 21 pupils, 12 were

identified as members of this group during the initial assessment.

2. Children whose initial frequencies indicated a performance deficit but who responded well to the small group instruction and did not require further individualization to master the target skill. Six of the pupils originally identified as having a performance deficit fell in this group, and they responded well to the small-group instruction.

3. Children whose initial frequencies indicated a performance deficit and who did not progress well as a result of the small-group instruction. Three of the nine children originally identified as having performance deficit fell in this group, and they became the focus of increased efforts to individualize their instructional program.

### *Implementing More Highly Individualized Programs*

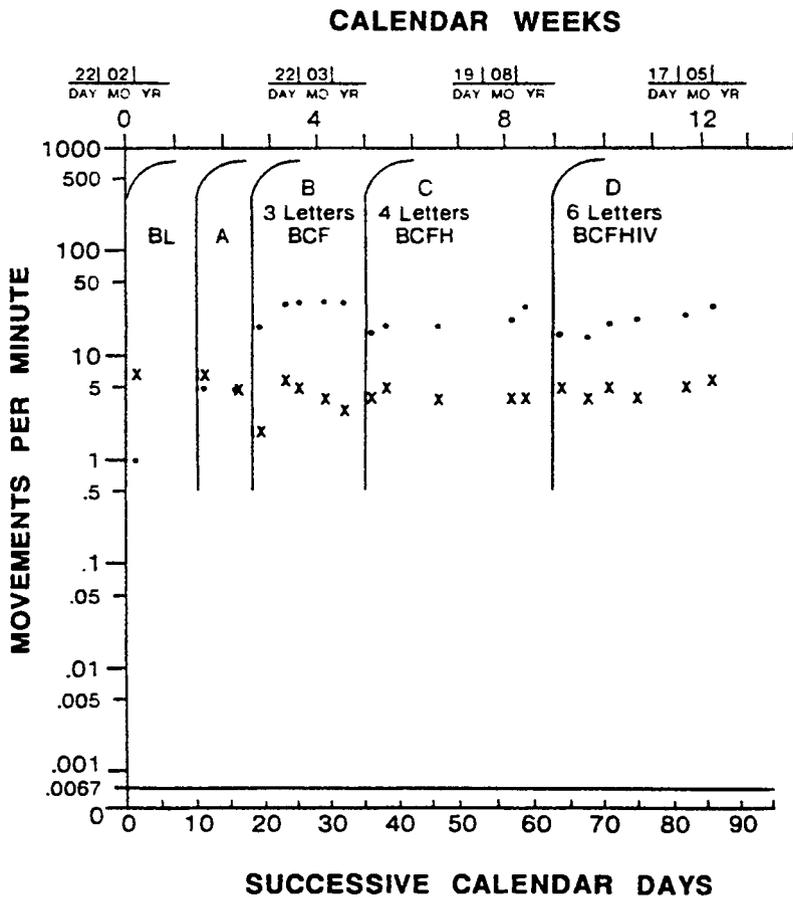
A Chart showing the effects of the increased efforts at individualization with one pupil are shown in Figure 2. During the initial assessment phase or baseline period (BL), the pupil's performances were clearly deficient, with only one correct response and seven errors. When exposed to instruction in the small group (phase A on the Chart), correct performances jumped to a frequency of five per minute, but no further progress was observed by the end of the next session and there was no substantial decrease in errors. It was decided at this point to provide more individualized instruction.

A new program was implemented with instruction provided on a one-to-one basis covering only the letters B, C, and F (phase B on the Chart). The general instructional strategies were the same as those employed for the small-group sessions.

Working with the smaller number of letters resulted in an improvement in both correct and error performances. When performances reached the minimal expectations outlined earlier for the small group, the letter H was added to the set being taught (phase C on the Chart). After an initial decrease in correct responses and a slight increase in errors, the pupil made gradual progress and met the

**Figure 2**

# CHART FOR GROUP THREE



performance aims after five individual sessions completed over a 4-week period. That pattern of progress was repeated in the last phase of the program (phase D), in which the letters I and V were added to the instructional set.

The learning patterns shown in Figure 2 were typical for the three targeted pupils small-group remedial program. While some progress was made, it was clearly insufficient to correct the pupils' performance deficits before the end of the year. Perhaps if the program had been implemented earlier in the school year, or the individual sessions had been conducted more frequently, more progress might have been made. In any event, these three children have clearly been identified as being at risk for developing chronic learning problems, and they have been targeted for increased attention during the coming year.

A final probe was given to the entire class at the end of the school year. The procedures were the same as those used for the initial assessments, but they employed only the randomly ordered see/say letter sounds probe. For most of the children, meaningful gains were made on the targeted task. Five of the nine students in the remedial group moved from the bottom half of the class to the top half. The remedial group's median correct performance was 38 per minute, which was one point higher than the median correct performance for the rest of the class. Over all, therefore, the program was considered a success.

### *Implications for Practice*

This project demonstrated that a curriculum-based Precision Teaching assessment and remediation program can help to identify children whose academic performance lags behind their peers. It also showed that relatively simple instructional procedures can be effective in helping most pupils overcome their deficits and that, by monitoring remedial efforts with the standard celeration chart, pupils with learning deficits can be identified and targeted for additional individualized attention. That is especially significant at a time when more emphasis is being placed on pupils' problems through prereferral procedures before the involvement of special education services. Finally, these procedures

are both inexpensive and efficient. They can be implemented easily in a regular education setting with a minimum of training and effort. Because the assessment and instructional targets are drawn from the existing curriculum, they can be adapted to meet local priorities.

### **References**

- Epstein, M., Kauffman, J. M., & Cullinan, D. (1985). Patterns of maladjustment among the behaviorally disordered, II: Boys aged 6-11, boys aged 12-18, girls aged 6-11, and girls aged 12-18. *Behavioral Disorders, 10*, 125-135.
- Wallace, G., & Larsen, S. L. (1986). *Assessment: Evaluating students with learning and behavior problems*. Austin, TX: Pro-Ed.
- White, O. R., & Haring, N. G. (1980). *Exceptional Teaching* (2nd ed.). Columbus, OH: Merrill.

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