

## Camelot's First-grade Reading Pilot: Report of Performance and Learning Effects from Three Years of SBG's *World of Reading* with the '93 Class Enhanced by SRA's *Reading Mastery, Fast Cycle I/II* and Precision Teaching

Malcolm D. Neely

This paper reports reading results for three years of Camelot Elementary School's first-grade curriculum, instruction, and practicing. It reports the measurement of pupils' performances and learning rates that are *curriculum-based* and *outcome-based measurement*. Learning pictures on Precision Teaching's Standard Monthly Learning Charts compare performances and learning rates of three Camelot first-grade years, '90-91, '91-92, and '92-93. The '90-91 first-grade pupils received instruction from the Silver Burdett-Ginn *World of Reading* series, only. The '91-92 pupils received instruction from the SBG *World of Reading* with the most at-risk receiving additional Precision Teaching practice and chart viewing. The '92-93 class included two instructional groups. One group with 11 pupils who could already read or had mastered their reading readiness skills continued to receive SBG's *World of Reading* instruction, only. This report excludes their data. The second group of 44 pupils received instruction from Science Research Associates *Reading Mastery, Fast Cycle I/II* with additional Precision Teaching practice and Chart viewing. All three years experienced language arts skill development with whole language concepts and SBG *World of Reading* materials. The median test with both Fisher's exact and chi-square probabilities determined the significance of differences between the distributions of each year's pupil performances and learning rates. Major conclusions are: (a) *Reading Mastery* and Precision Teaching combined to produce faster '92-93 fluency development (x1.8 and x2.0). (b) *Reading Mastery* and Precision Teaching combined to produce faster '92-93 accuracy development (x1.8). (c) Precision Teaching assisted in faster '91-92 at-risk pupils' fluency development (x1.4). (d) Teachers are not the cause of faulty reading development; faulty curriculum, instruction, practice, and measurement designs are. Additional conclusions and recommendations are discussed.

This paper reports reading results for three years of Camelot Elementary School's first-grade curriculum, instruction, and practicing. Measurement of pupils' performances and learning rates were all *curriculum-based* and *outcome-based*.

Learning pictures on Precision Teaching's Standard Monthly Learning Charts compare performances and learning rates of three Camelot first-grade years, '90-91, '91-92, and '92-93. The '90-91 first-grade pupils received instruction from the Silver Burdett-Ginn *World of Reading* series, only. The '91-92 pupils received instruction from the SBG *World of Reading*, with the most at-risk receiving additional Precision Teaching practice and Chart viewing.

The '92-93 pupils included two instructional groups. One group with 11 pupils, half who could already read third grade material or above and half who had mastered their reading readiness skills, continued to receive SBG's *World of Reading* instruction, only. Three of the group

left before the end of first semester, and one joined this group in the spring. The group was divided into two instructional subgroups according to their skill attainment. Since the population change was 36 percent and the instruction was the same SBG format as the previous two years, this report does not include the data of the reading skilled students. The second group of 44 pupils received instruction from Science Research Associates *Reading Mastery, Fast Cycle I/II* with additional Precision Teaching practice and Chart viewing. All three years experienced language arts skill development with whole language concepts and SBG *World of Reading* materials during a different time of day than reading instruction.

Located in Federal Way, Washington, Camelot Elementary School is primarily a walking school with only a couple of small buses bringing district special education pupils. From year to year Camelot's free and reduced lunch population ranges from 30 to 33%. This range

is largely due to a federal housing project nearby. Camelot's current 380 student enrollment is declining due to the aging of the surrounding community. Once the school year begins, enrollment remains fairly steady. A Primary Intervention Program (PIP) for counseling K-3 pupils-at-risk, a building counselor for others, and the principal, all address Camelot's pupil and parent social problems. The Camelot community makes a very positive and pleasant school in which to learn and work.

Previous reading programs, phonics-based and linguistic-driven *Economy Keys to Reading*, and the more recent reading program, sight-based and whole language driven SBG's *World of Reading*, produced a 30 to 50% Camelot population eligible for Chapter 1 reading service consideration. Those numbers equaled enough reading problems to justify a teacher for Chapter 1 pupils along with two teaching assistants, and a resource room teacher and assistant.

Two years of fluency data and continued teacher dissatisfaction still indicated too many pupils with poor reading skills. Review of the literature showed a need for a different curricular and instructional design than the previous attempts. Camelot's Chapter 1 Steering Committee decided to focus on the first grade where reading development is most crucial, rather than to continue "bandaiding" with limited Chapter services across the grades as before.

SRA's *Reading Mastery Fast Cycle IIII* was the reading program chosen to address Camelot's reading development problems. *Reading Mastery Fast Cycle IIII* was to supplement SBG's *World of Reading* instruction for those youngsters found to be at-risk. Chapter 1 and Individualized Educational Program (IEP) criteria defined the *at-risk* pupils. Representatives from the District's Educational Support Services Division met with Camelot's Principal, Phyllis Tellari; First-Grade Teachers, Carol Pardue and Theona Wall; and Support Staff, Malcolm Neely, Donna Luchs, and Carol Zuck. The District approved Camelot's piloting the *Reading Mastery Fast Cycle IIII* supplemental program beginning with the 1992-1993 school year.

## Procedure

### *Previous programs*

Three Camelot teachers taught fifty '90-91 first-grade pupils reading instruction in three rooms for 60 to 75 minutes each day. They used SBG's *World of Reading* and whole language approach, only. A Chapter 1 teaching assistant pulled 15 at-risk pupils into groups of three to five, for 15 minutes of additional instruction each. The pupils tried to reread the story of the day.

Two Camelot teachers taught fifty-seven '91-92 first-grade pupils reading instruction in two rooms for 60 to 75 minutes each day. They also used SBG's *World of Reading* and whole language approach. As before, the Chapter 1 teaching assistant pulled 15 at-risk pupils into groups of three to five for 15 minutes of additional instruction. Again, the pupils tried to reread the day's story. There was, however, an add-on assistance technique. Forty-four of the fifty-seven students received additional practice through two or three one-minute daily practice projects during the first three-and-a-half months when one to three parent volunteers assisted an hour-and-a-half per day of additional Chapter 1 help. As the volunteers decreased for various reasons, only the least skillful pupils continued to practice and Chart view.

### *New program*

A changed population -- a population with even more challenges than previously considered, met Camelot's "new program." Replacing its usual population were 11 Ukrainian children, one Pakistani child, one Korean child {all English as Second Language (ESL) defined}, and twins with IEP's from Special Education's pre-school program. Moreover, a greater number of the rest of the September first-graders showed lower reading readiness skills. Of the 55 first graders, 44 pupils fell within the criteria defining Camelot's at-risk. Had any of these 44 children entered Camelot School in previous years, they would have been eligible for its Chapter 1 support services.

The pilot program for '92-93 consisted of two Camelot teachers teaching in two rooms 52 to 55 first-grade pupils reading instruction from SBG's *World of Reading* and whole language

approach with two additional assist techniques. Forty-four pupils received daily 60 to 75 minutes of SRA's *Reading Mastery Fast Cycle III* instruction from the teachers and three assistants, as well as up to five, daily, one-minute practice projects.

Three *Reading Mastery* groups and one *World of Reading* group comprised each classroom. The classroom teacher taught her *World of Reading* group on Mondays and Fridays and traded with each assistant-taught *Reading Mastery* group during the mid-days. That way the teacher kept informed with the program and progress of all her pupils, and practiced *Reading Mastery* teaching techniques.

While the team was in one first-grade classroom, the other classroom teacher taught reading and language arts development using whole language techniques with the *World of Reading* first-grade materials. The teacher used the *DISTAR Library* and *Reading Mastery* spelling portion, also. Each classroom alternated *Reading Mastery* instruction between 9:30 to 10:45 and between 1:15 to 2:15 every other day. That way each class received five morning and five afternoon *Reading Mastery Fast Cycle III* and *World of Reading* instructional days in a ten day period.

Grouping considered both classrooms as one. Camelot's first grade had six *Reading Mastery Fast Cycle III* groups and two *World of Reading* groups. Neither *Reading Mastery I* nor *Reading Mastery II* was available to the team, only the *Fast Cycle* series. In the beginning, ten or eleven children were not in their home-rooms. After repeated regroupings, 20 or more pupils exchanged rooms for reading or language instruction. With so much interchange, progress report writing demanded a team effort.

Training. Science Research Associates sponsored a Direct Instruction Workshop in Bellevue, Washington in August 1992. Two staff members had some experience with *Reading Mastery Fast Cycle III*. Two members had little or no exposure to the program. One teacher was unable to attend the workshop. She received help from those who attended and who had some experience. With SRA's Representative Neil Schroeder's help, SRA also

sponsored Molly Olson, a well-qualified DI Trainer, to provide the staff with follow-up training four times during the year. In addition, the District bought training tapes (J/P Associates, Inc.). Staff members used the tapes to study, compare, and improve their skills using *Reading Mastery Fast Cycle III*.

Measurement. *Reading Mastery Fast Cycle III* provides for small segment testing by small group unison and individual response as an integral instructional design. [Periodically *Reading Mastery Fast Cycle III* individually tests after a day's lesson.] Lastly, *Reading Mastery Fast Cycle III* provides pencil/paper tests after 20 lessons.

Precision Teaching techniques supplied additional decision making data from practices designed for firming and fluency building. Pupils said their *Reading Mastery* orthography sounds from SAFMEDS (Say-All-Fast-Minute-Every Day-Shuffle) and from a practice sheet, and read their *Reading Mastery* words from seven practice sheets composed from eight stories spaced throughout the *Fast Cycle III* series. The adults charted each pupil's performances on the Standard Daily Learning Chart (Behavior Research Company) while the pupil watched. These charted performances provide daily fluency, accuracy, and weekly learning measurement (Pennypacker, Koenig, & Lindsley, 1972). The support staff provided this service for individual pupils within the two classrooms throughout the school day.

Precision Teaching techniques also supplied the basis for the *circa*-60-day progress-checks. There were seven, one-minute-tests administered by staff and volunteers to each pupil during a progress-check. Neely charted the results on the Standard Monthly Summary Learning Chart (Behavior Research Company). The seven, one-minute-tests were:

1. see mixed upper and lower case letters, and say the letter names;
2. see lower case letters, and say the letter sounds;
3. see all 50 *World of Reading* Readiness and Level-1 words, and say the words;
4. see all *World of Reading* Readiness words in sentences, and say the words;

5. see *World of Reading* 34 Critical plus one Support Level-2 words and 35 Critical plus two Support Level-3 words, and say the words;
6. see *World of Reading* 42 Tested plus two additional Critical Level-4 words and 31 tested plus 13 additional Critical Level-5 words, and say the words;
7. see *World of Reading's* "A New Day in the City" Level-5 story, and say the words.

The 16 readiness words introduced in kindergarten and 23 family member words made the ten sentences that test kindergarten word fluency. Some sentences came from the SBG's *World of Reading* Placement Test; we invented the other sentences.

"A New Day in the City" comes late in the first-grade *World Of Reading* reader. Because of the story's inclusion in the first-grade reader, one assumes the story to be less than grade-two reading difficulty. Microsoft's word readability formulas, Flesch-Kincaid and Flesch, indicate readability levels from 2.8 to 6.0. Unreliable readability formulas prevent discussion of grade-level attainment. However, since the tests for all three years used the same passage and words, we can compare performances and progresses.

Neely's interest in effective educational measurement led to the test materials and testing in '90-91 and '91-92. Fortunately, the data were available for decision making and subsequent comparative data when the '92-93 year allowed change and comparison. The tests measure pupil performance and learning for each part. Pupils take one minute for each part. Neely charted the results on Standard Monthly Learning Charts to show monthly performances and half-year learning rates.

Neely compared the SBG Progress-Check timed tests with the *Reading Mastery Fast Cycle III* reading program to be sure that what was tested was taught. The word comparison of the *World of Reading* progress-check words and the *Reading Mastery Fast Cycle III* words showed 82% agreement. When the pupils completed lesson 170 in *Reading Mastery Fast Cycle III*, the pupils practiced 345 of the 420 representa-

tive *World of Reading* critical, support, and story words found in the progress checks. Most Progress-Check tests had more sounds or words than pupils could respond to within the allowed time. Pupils stopped reading when the timer signaled the minute's end. As pupils got faster, they completed the tests in less time than one minute. The adults who were testing instructed the pupils to start over from the top and continue until the signal sounded. The adults were the support staff, parents, student-teachers from state universities, and teachers freed by their student-teachers. A group of fifty-some youngsters showed their seven, one-minute skills to between six and nine recorders within 70 to 90 minutes of listening. A *maitre d'* maintained the efficiency by bringing just the number of pupils from their classroom, as needed, to prevent listening and recording down-time. Ushering pupils conserved pupil time for classroom activities as well.

Though cross-age reading was not a constant practice, it did occur. When the *Reading Mastery Fast Cycle III* pupils received stories to read, they impressed the older students. From time to time adult visitors, including higher grade Camelot teachers, told the first-grade reading team how impressed they were with the reading and progress of the first-graders during the year. By spring-time, visiting teachers could not discern the Ukrainian ESL youngsters from among their respective reading groups.

While important to hear the subjective adulations from reading listeners, the test of significantly making a difference comes from objective data. *Reading Mastery Fast Cycle III's* three levels of classroom testing provided objective data for effective teaching decisions. Precision Teaching's Standard Daily Behavior and Learning Charts showed daily practices and provided pupils with daily progress, weekly learning, and current incentive information. The pupils' daily practice Charts also showed the Camelot reading team learning pictures from which to make effective instructional and practice decisions.

Administrative periodic evaluations came from the *circa* 60-day progress checks charted on Precision Teaching's Standard Monthly Summary Behavior and Learning Charts.

Charting longer range performance outcomes on the Standard Monthly Summary Chart is *outcome based measurement*, but with proportional, multiply-divide Charts to better show performance, learning, and comparative data. Charts 1, 2, and, 3, are examples of charted pupil test data on the Monthly Summary Chart.

## Results

Charts 1 and 2 are Tatyana's Monthly Summary Chart showing seven tests with six progress checks across the ten academic months of 1992-1993. The correct and error learning lines drawn through the six checks of each test, when viewed together, are a *learning picture* pair (Lindsley, 1990), and each picture type can be counted. *The Handbook of the Standard Behavior Chart* (Pennypacker, Lindsley, and Koenig, 1972) describes the *split-middle, quarter-intersect method* for drawing these learning lines.

Two Charts recorded the year's seven, one-minute test performances and resulting learning pictures for each pupil, as shown, by Tatyana's two Charts.

Analyses. Pupils to supervisors compare Learning Charts by holding the translucent charts up to ceiling, window, overhead projector, or tracing board light. They learn to "eyeball" significance of differences because the Chart distances are always the same, and the distributions are always symmetrical and proportional.

Neely charted the frequency and celeration distributions to facilitate median tests for significance of differences using both Fisher exact and chi-square calculated probabilities. The actual pupil September and June frequencies, instead of the ends of the learning lines, provided the data to determine those probabilities.

Neely bundled five of the seven tests together in order to summarize each pupil's overall reading progress. The five, one-minute tests bundled together as one five-minute observation were say letter sounds, say words from the three word-lists, and say words from the story. This bundling excluded two tests, *see-to-say letter*

*names* and *see-to-say readiness sentences*. There were three reasons to not include the *see-to-say letter-names* test. First, there was no instructional difference for teaching letter naming across the three years. *Reading Mastery FC III* ignores the letter-names until the year is nearly over. Second, there were no pupil *see-to-say letter-name* fluency building projects during any one of the three years. Finally, there were no significant differences in letter naming performances or learning rates among the three years. The reason to not include the *see-to-say readiness-sentences* data with the bundled-tests data was that this test did not exist until the second year. The two tests' data were viewed separately.

Chart 3 shows bundled learning picture pairs for five pupils.

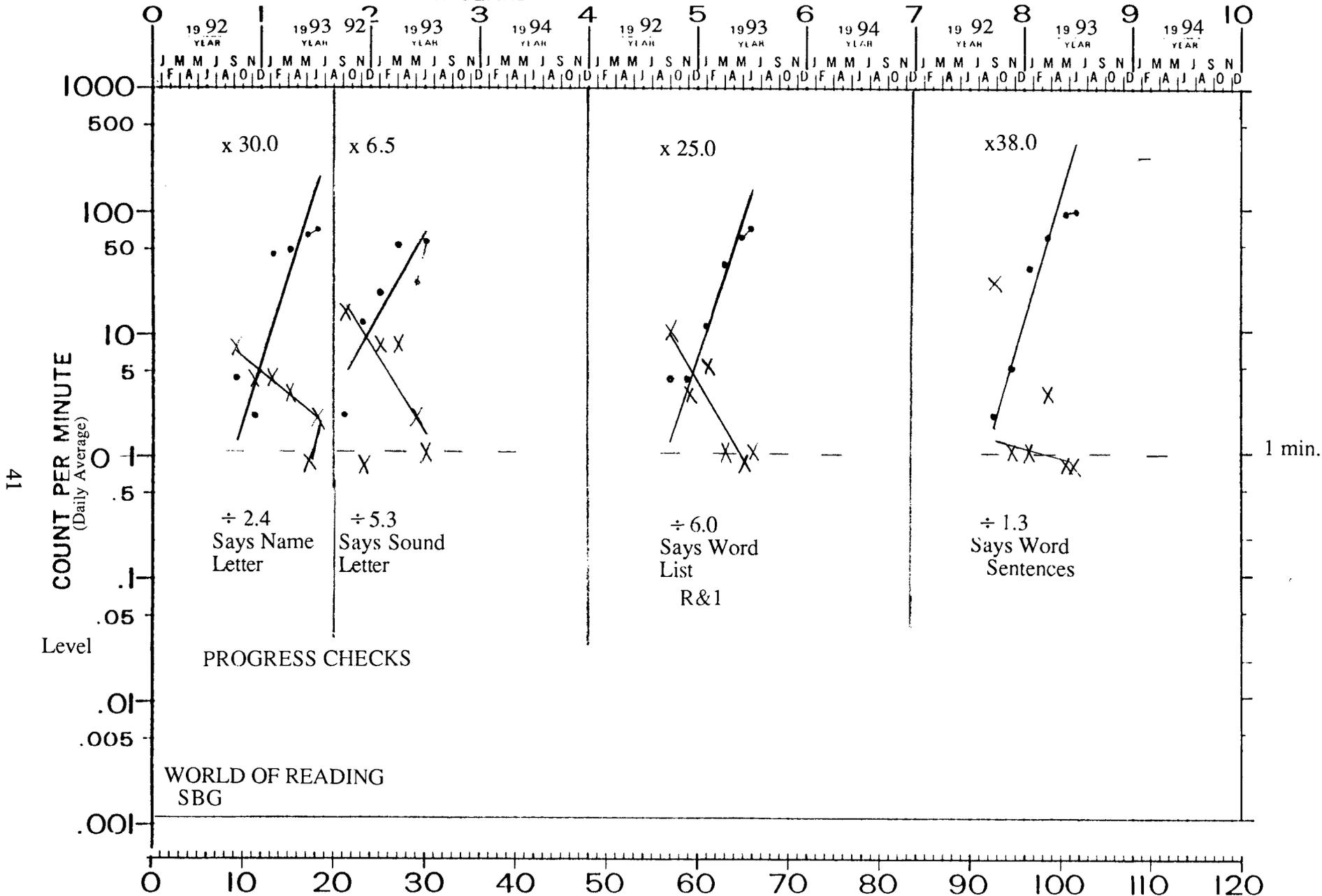
Pupils' Correct Responses. Chart 4 shows a collection of the five bundled tests' correct (fluency) learning lines for the first-grade pupils for the three school years, '90-91, '91-92, and '92-93. Tracing paper placed over each pupil's learning line and tracing the line within its frequency and calendar points formed the learning line collections. A number 2 pencil made each line with the same pressure. The darker and/or wider lines noticed on each collection represent the paths of more learners. The three collection pictures look as though three winds blew sticks in respective directions, with errant puffs misdirecting some.

By further visual analysis (using a transparent straight edge helps), one can see that most of the '92-93 *Reading Mastery Fast Cycle III* pupils' fluency learning lines began lower than the learning lines of the '90-91 and '91-92 *World of Reading* years. Most of the '92-93 *Reading Mastery Fast Cycle III* pupils' fluency learning lines are steeper, showing faster fluency learning rates. Most of the '92-93 *Reading Mastery Fast Cycle III* pupils' fluency learning lines end in June as high as, or higher than, the upper halves of the two previous *World of Reading* years.

Chart 5 shows the fluency learning line distributions and the distributions' respective seven-line celeration profiles for the first-grade pupils for the three school years, '90-91, '91-92, and '92-

CALENDAR YEARS

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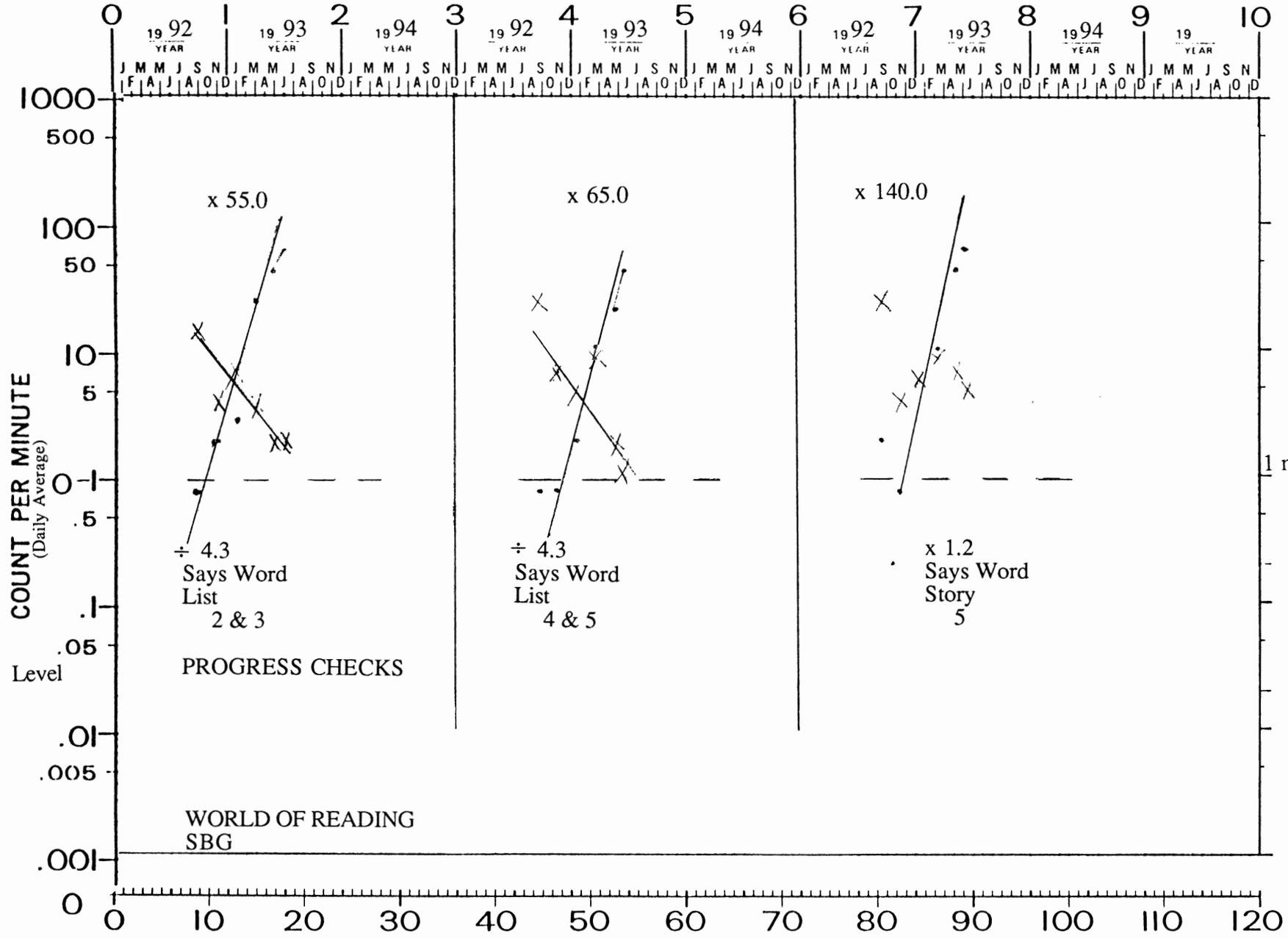


SUCCESSIVE CALENDAR MONTHS

SUPERVISOR		T. Wall ADVISER MANAGER		Tatyana		SRA-RMFC I/II SBG	
DEPOSITOR		Camelot Elem. AGENCY		Volunteers TIMER		AG GRD 1	
				Volunteers COUNTER		LABEL Plus PT	
				CHARTER		COUNTED	



CALENDAR YEARS

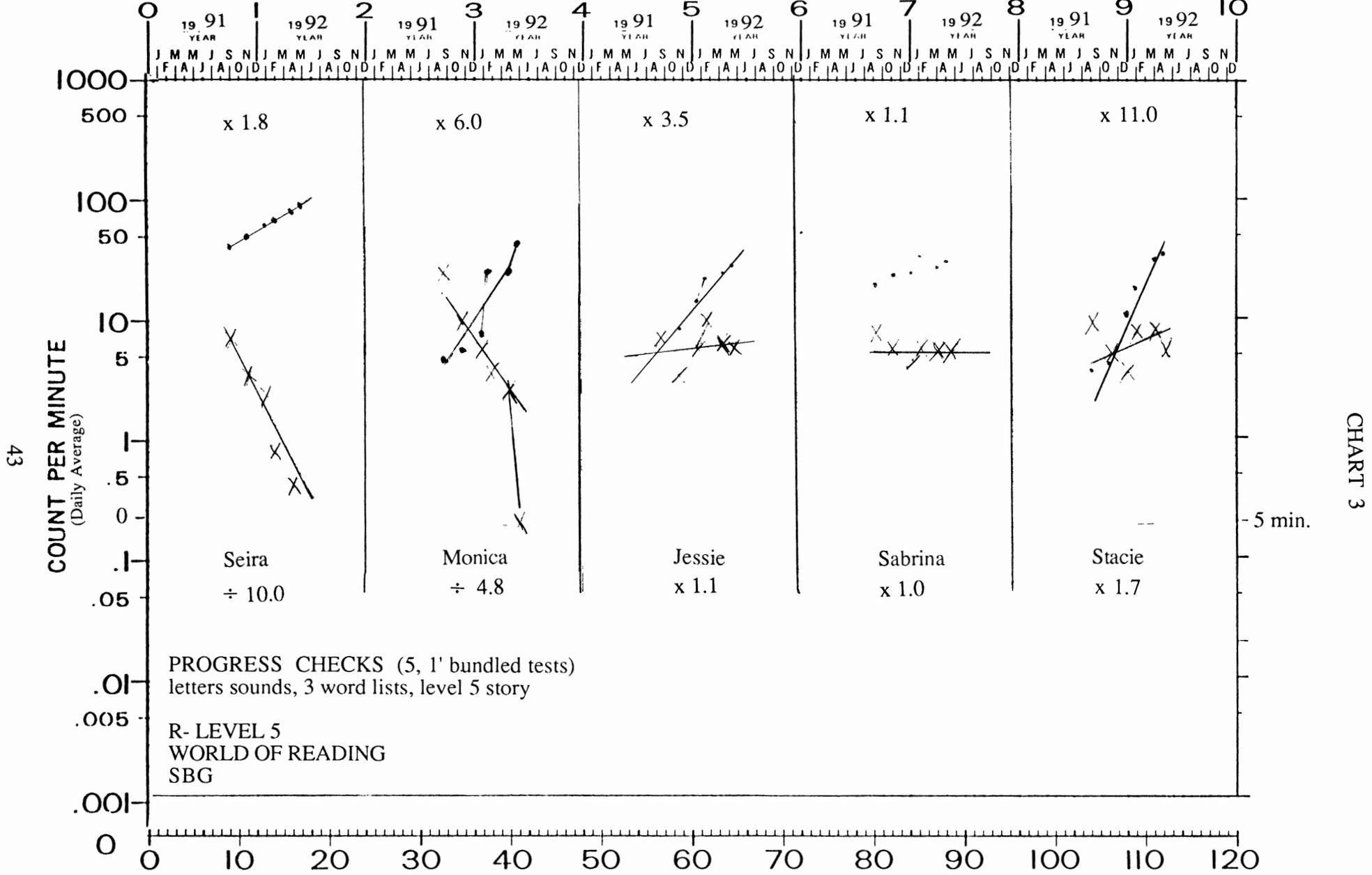


42

CHART 2

1 min.

SUPERVISOR		T. Wall	SUCCESSIVE CALENDAR MONTHS		Tatyana	SRA-RMFC I/II SBG	
ADVISER		Camelot Elem.	Volunteers	Volunteers	BEHAVER	AGE	LABEL
DEPOSITOR		AGENCY	TIMER	COUNTER	Neely	GRD 1	Plus
					CHARTER		PT

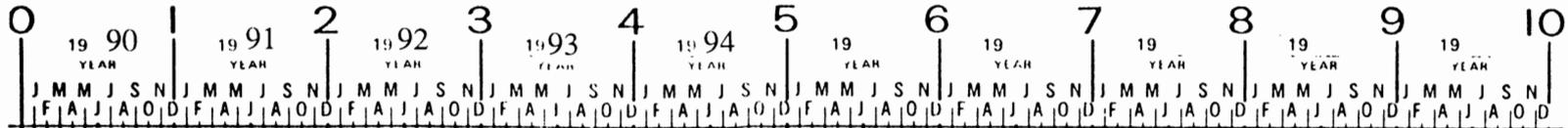


SUPERVISOR	ADVISER	MANAGER	TIMER	COUNTER	CHARTER	AGE	SBG LABEL	Say Sound/Word COUNTED
	Tellari	Pardue/Wall	Volunteers	Volunteers	Pupils	GRD 1	Plus PT To lower Q	
DEPOSITOR	Camelot Elem.	AGENCY			Neely			



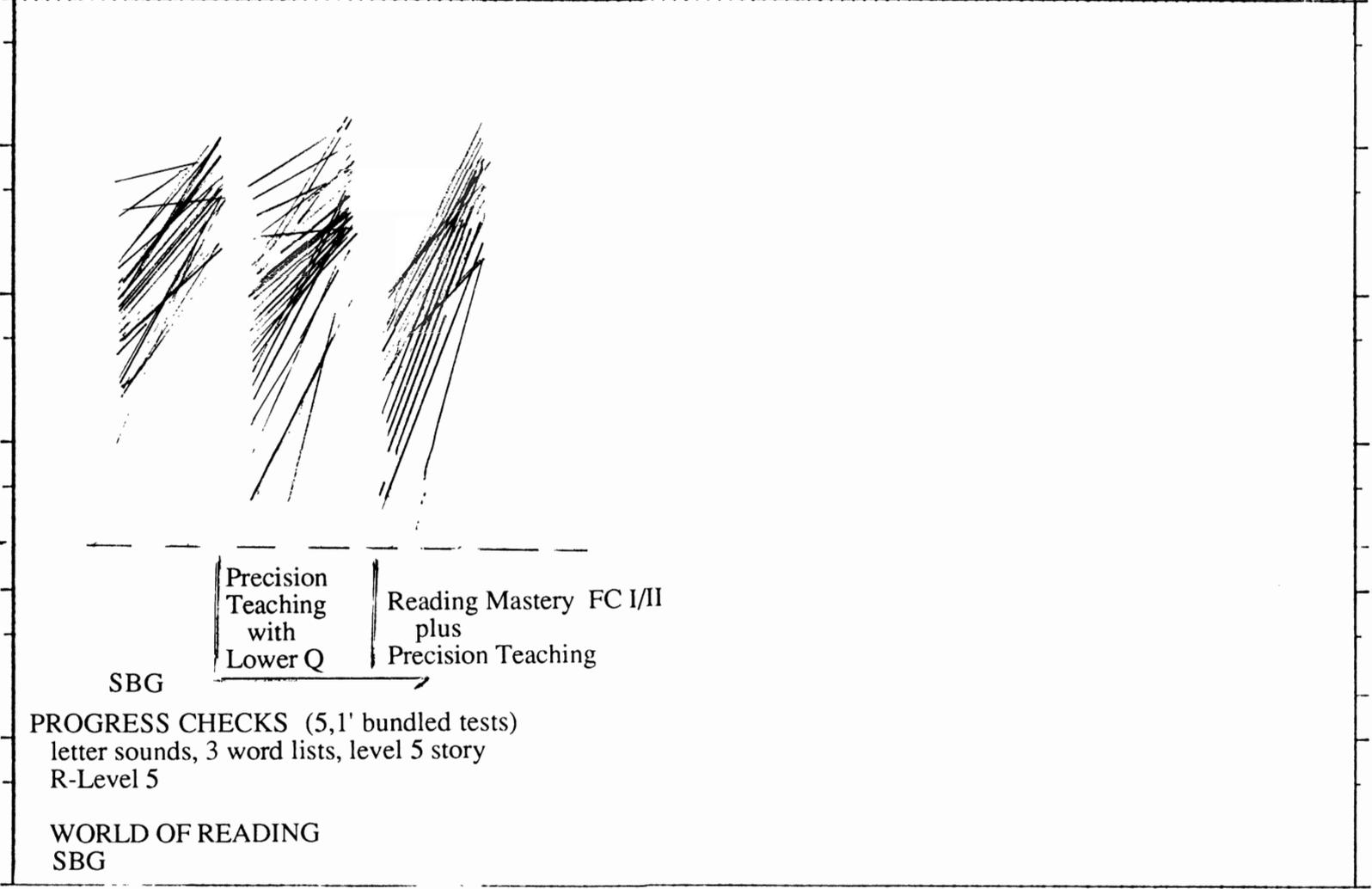
MONTHLY BEHAVIOR CHART (MCM-2EN)  
 6 CYCLE -- 120 MONTHS (10 YEARS)  
 BEHAVIOR RESEARCH CO.  
 BOX 3351 -- KANSAS CITY KANS 66103

CALENDAR YEARS



COUNT

44



CURRICULUM and INSTRUCTION

SBG  
 Precision Teaching with Lower Q  
 Reading Mastery FC I/II plus Precision Teaching  
 PROGRESS CHECKS (5,1' bundled tests)  
 letter sounds, 3 word lists, level 5 story  
 R-Level 5  
 WORLD OF READING  
 SBG

5 min.

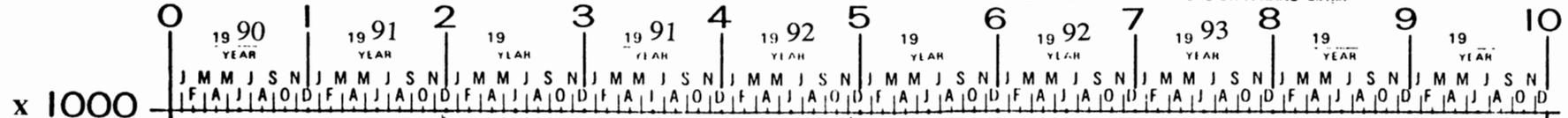
CHART 4

49 56 44

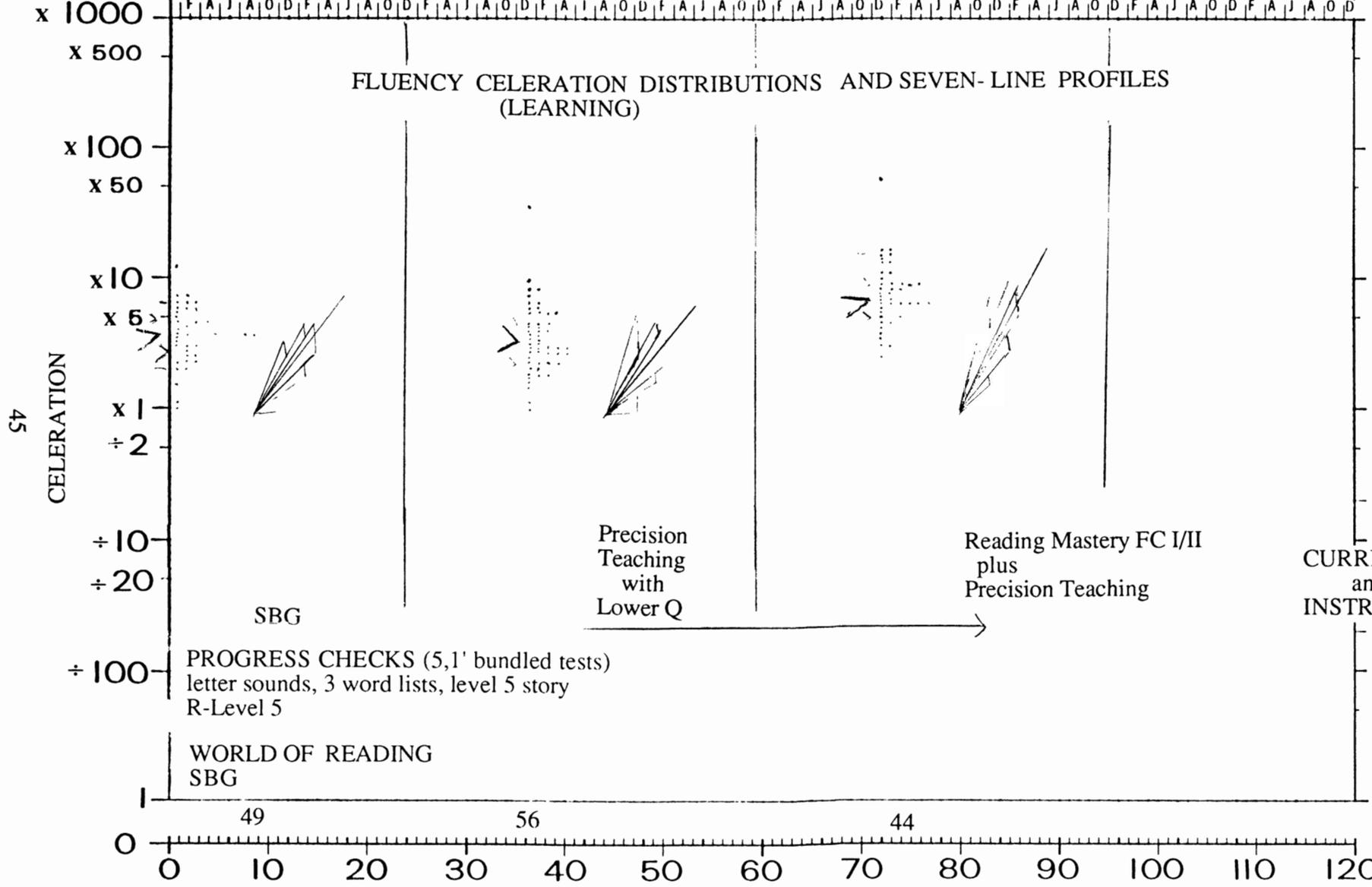
SUCCESSIVE CALENDAR MONTHS

SUPERVISOR		Tellari	Pardue/Wall		Pupils		Say Sound/Word	
DEPOSITOR		ADVISER	MANAGER		BEHAVIOR		AGE	LABEL
		Camelot Elem.			Neely		GRD 1	COUNTED
		AGENCY	Volunteers		Volunteers		CHARTER	
			TIMER		COUNTER			

CALENDAR YEARS



FLUENCY ACCELERATION DISTRIBUTIONS AND SEVEN-LINE PROFILES  
 (LEARNING)



PROGRESS CHECKS (5,1' bundled tests)  
 letter sounds, 3 word lists, level 5 story  
 R-Level 5

WORLD OF READING  
 SBG

SUCCESSIVE CALENDAR MONTHS

SUPERVISOR	Tellari ADVISER	Pardue/Wall MANAGER			Pupils BEHAVIOR	AGE GRD 1	Say Sound/Word LABEL COUNTED
DEPOSITOR	Camelot Elem. AGENCY		Volunteers TIMER	Volunteers COUNTER	Neely CHARTER		

CHART 5

93. Neely charted the pupils' half-year learning rate-distributions for each academic year. Simple counting produced the seven celeration points on the distributions. The seven points provided information for drawing the seven-line celeration profiles.

Learning lines radiate from one central point to better show their relative rates of growth. The longer middle line represents the middle pupil fluency learning rate for each respective academic year. The learning lines above and below represent the pupil quarter rates, the next ten percent learning rates above and below, and finally, the fastest and the slowest pupil fluency learning rates.

The seven-line fluency learning line profiles simplify the picture collections for clearer analysis. Like the fluency learning line collections in Chart 4, Chart 5 shows the steeper (faster) fluency learning rates of the '92-93 *Reading Mastery FC III* Direct Instruction and Precision Teaching supplemental program compared with the previous two *World of Reading*, only, years.

The middle  $\times 7.3$  per minute per half-year learning rate for '92-93 was nearly two times faster than the respective  $\times 4.0$  ( $p = .0000001$ ) and  $\times 3.6$  ( $p = .0000000034$ ) previous years. Analyses of the other respective fluency learning lines show the same times two, half-year multiplier favoring the *Reading Mastery Fast Cycle III*, Precision Teaching practicing, and pupil Chart monitoring year.

Chart 6 shows seven-point fluency performance rate (frequency per minute) profiles from September to end-of-May or early-June for the five bundled tests for the three school years, '90-91, '91-92, and '92-93.

Neely charted each year's pupil performance distributions as just shown by the learning celeration distributions on Chart 5. Chart 6 does not show the charted pupil performance distributions. Simple counting produced seven performance points on the distributions. The seven points provided information for drawing the seven-point performance profiles onto Chart 6. The black circle represents the middle pupil fluency performance for each progress check during the academic year. Small lines above

and below the middle represent quarter fluency performances. Small dots to either side of the vertical line represent the ten percent points above and below. Finally, ends of the vertical line represent the fastest and the slowest pupil fluency performance rates.

Again, one sees on Chart 6, as well as on Chart 4, significantly lower '92 September reading readiness starting points. The median test applied to the September middle scores finds lower '92 September differences significant to  $p = .000027$  and  $p = .019$ , respectively. Chart 6 also shows slightly higher or higher '93 June reading fluency ending points. Applying the median test to end-of-May or early-June middle scores reveals higher '93 June differences significant to  $p = .136$  and  $p = .014$ , respectively.

Individual learning pictures and Chart 6 show that six pupils were still at acquisition, below 20 correct responses per minute in June. They should have begun the *Reading Mastery I* sequence in September instead of *Reading Mastery, Fast Cycle III*. *Reading Mastery I* followed by *Reading Mastery 2* doubles instruction, practice, and time; our six pupils would have profited more.

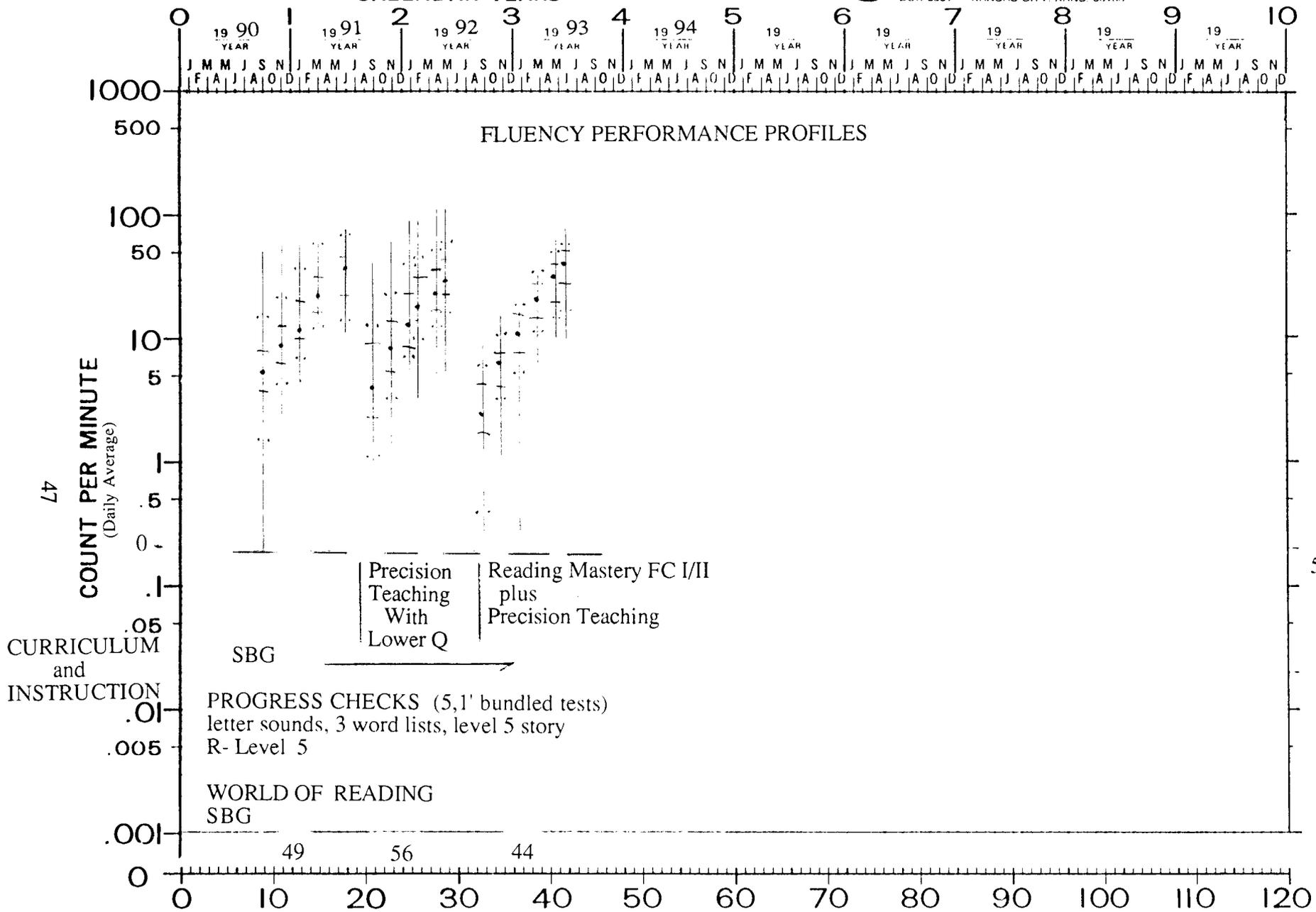
To see the performance progress of each class, for each academic year, follow the middle dots, or any other point, across and up the Chart. A transparent straight edge may help to view this progress, too. Chart 7 shows these drawn lines.

Chart 7 shows five-line learning profiles for the middle, quarter, and ten-percent points shown in Chart 6. The procedure for drawing the five best-fit learning lines through their respective quantile points is the same as for drawing Tatyana's learning lines in Charts 1 and 2.

Chart 7's learning lines do not show any specific pupil's growth, but rather specific point growth of each class. The middle learning line represents middle-point growth for each group. The lines directly above and below represent quarter-point growth. The highest and lowest lines represent ten-percent-point growth. One can read the respective learning rates (*i.e.*, response change per minute, per month, per half-year, for each year in the lower half of the Chart.)

CALENDAR YEARS

2 CYCLE - (72 MONTHS (10 YEARS))  
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CURRICULUM and INSTRUCTION

CHART 6

SUCCESSIVE CALENDAR MONTHS

	Tellari	Pardue/Wall		Pupils		Say Sound/Word
SUPERVISOR	ADVISER	MANAGER		BEHAVIOR	AGE	LABEL
	Camelot Elem.		Volunteers	Neely	GRD 1	COUNTED
DEPOSITOR	AGENCY		TIMER	CHARTER		



MONTHLY BEHAVIOR CHART (MCM-ZEN)  
 6 CYCLE — 120 MONTHS (10 YEARS)  
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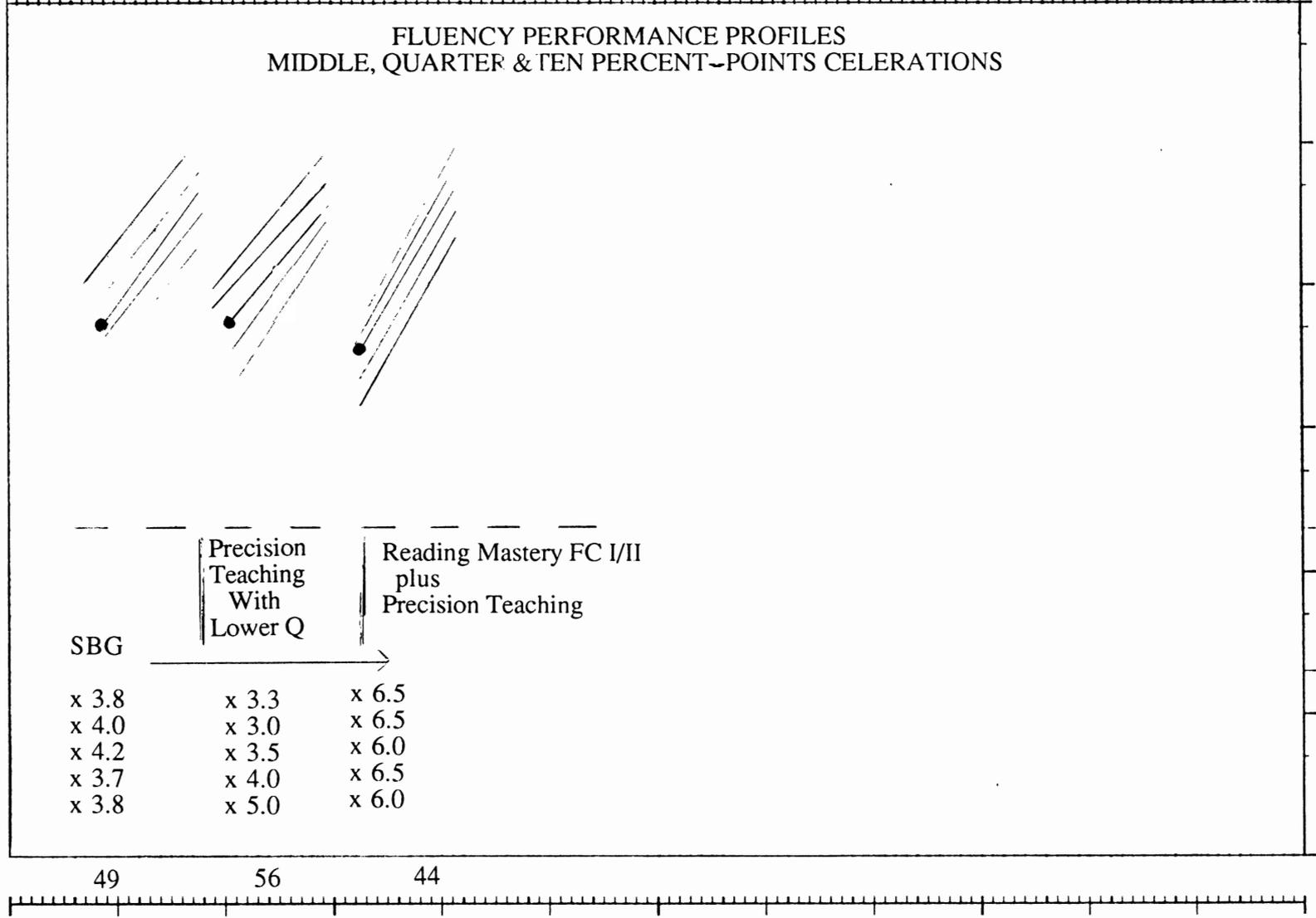
CALENDAR YEARS



FLUENCY PERFORMANCE PROFILES  
 MIDDLE, QUARTER & TEN PERCENT-POINTS CELERATIONS

COUNT  
 48

0



5 min.

CHART 7

	Precision Teaching With Lower Q	Reading Mastery FC I/II plus Precision Teaching
SBG		
x 3.8	x 3.3	x 6.5
x 4.0	x 3.0	x 6.5
x 4.2	x 3.5	x 6.0
x 3.7	x 4.0	x 6.5
x 3.8	x 5.0	x 6.0

49                      56                      44

SUCCESSIVE CALENDAR MONTHS

SUPERVISOR	Tellari ADVISER	Pardue/Wall MANAGER	Volunteers TIMER	Volunteers COUNTER	Pupils BEHAVIOR	AGE GRD 1	Say Sound/Word LABEL    COUNTED
DEPOSITOR	Camelot Elem. AGENCY				Neely CHARTER		

For example, the line representing the change rate (learning rate) of the '92-93 group's middle scores is x6.0 per half-year, while the quarter lines are both x6.5 per half-year. The upper and lower ten-percent-points improved similarly with learning lines at x6.5 and x6.0, respectively.

Charts 4, 5, and 7 all show the steeper learning lines of the exemplary '92-93 *Reading Mastery* and Precision Teaching year.

Another steep line needs to be examined, as well. Notice the x5.0 bottom ten-percent learning line of '91-92. It represents the faster learning rates of the least prepared September '91 pupils. It shows a catch-up rate, that if sustained, would propel these learners beyond their neighboring peers. These were the pupils who received a full year's focus of Precision Teaching rapid practicing and pupil Chart monitoring as supplemental to SBG. The other '91-92 SBG pupils received less or no Precision Teaching practice, and their slower learning lines reflect the omission.

Pupils' Learning Opportunities (incorrect/error responses). Chart 8 shows a collection of the five bundled tests' error learning lines for the first-grade pupils for the three school years. As it was with Chart 4, tracing each pupil's learning line formed these error learning line collections. These error learning line collection pictures look as though three different types of winds controlled the lay of the sticks. The '92-93 force converged from the top, toppling the higher over the lower, and fanned them downward, so as to appear riveted together near the beginning. This error learning picture collection began as a x10 spread, converged to a x3, and spread to a x20.

The '91-92 force confronted the sticks at once, but with accompanying winds. The major force pushed with less directional change. The two other forces blew one set steeper and another set counter to the major force. This error learning picture collection began as a x100 spread, converged to a x40, and spread to a x90.

The '90-91 forces appeared even more diverse. The sticks appear as though a dust-devil blew through the center causing disarray. This error

learning picture collection began as a x100 spread, converged to a x20, and spread to a x90.

Again, by visual analysis, one can see that the '92-93 *Reading Mastery Fast Cycle IIII* pupils' error learning lines began higher than most of the previous two *World of Reading* years. More of the '92-93 *Reading Mastery Fast Cycle IIII* pupils' error learning lines are steeper, showing faster accuracy learning. The pupil error learning lines end in June with the same error spread for all three years.

Chart 9 shows error learning line distributions and the distributions' respective seven-line error learning line profiles for the first-grade pupils for the three school years. As for Chart 5, above, Neely charted the pupils' half-year learning rate-distributions for each academic year. Simple counting determined the seven error-celeration points on the distributions. The seven points provided the information for drawing these seven-line error-celeration profiles.

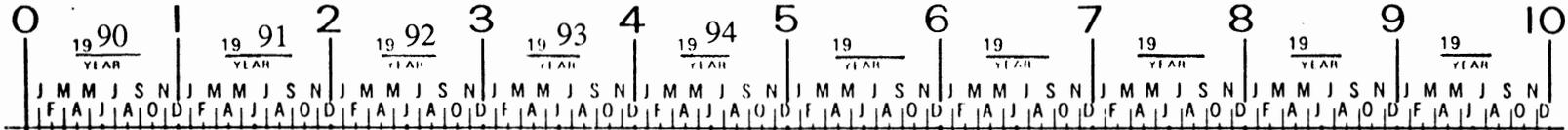
The longer middle line represents the middle-pupil error learning rate for each respective academic year. The learning lines above and below represent the quarter rates, the next ten percent learning rates above and below, and finally, the slowest and the fastest error, or accuracy, learning rates. The middle +3.3 per minute per half-year accuracy learning rate for '92-93 was 1.8 times faster than the two +1.8 previous years ( $p = .01$  and  $p = .000009$ , respectively).

As the fluency learning line collections in Chart 5 show, Chart 9 indicates the steeper (nearly two times faster) error learning rates of the '92-93 *Reading Mastery Fast Cycle IIII* Direct Instruction and Precision Teaching supplemental program.

Chart 10 shows seven-point error performance rate (frequency per minute) profiles from September to end-of-May or early-June for the five bundled tests for three school years. Neely charted each year's pupil error-performance distributions to determine the seven distribution performance-points, as he did for Charts 5, 6, and 9. The X represents the middle pupil error-performance for each progress check during the academic year. Small lines above and below the middle represent quarter error performances.

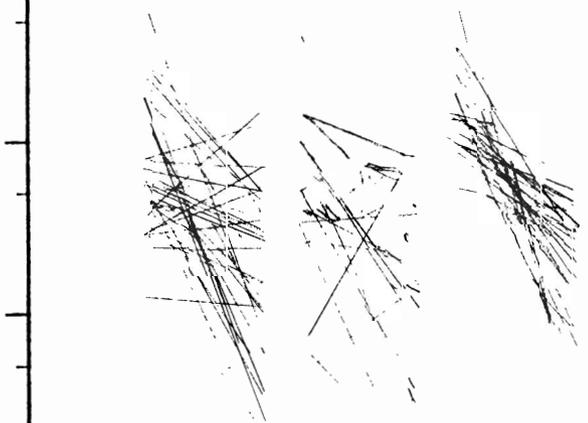


CALENDAR YEARS



ERROR LEARNING COLLECTIONS

COUNT  
 50  
 0  
 CURRICULUM  
 AND  
 INSTRUCTION



Precision Teaching with Lower Q  
 Reading Mastery FC I/II plus Precision Teaching

PROGRESS CHECKS (5,1' bundled tests)  
 letter sounds, 3 word lists, level 5 story  
 R-Level 5

WORLD OF READING  
 SGB

5 min.

49 56 44

SUCCESSIVE CALENDAR MONTHS

SUPERVISOR		Tellari	Pardue/Wall	Pupils		Say Sound/Word	
DEPOSITOR		Camelot Elem.	AGENCY	Volunteers	Volunteers	Neely	GRD 1
				TIMER	COUNTER	CHARTER	
						BEHAVIOR	AGE
						LABEL	COUNTED

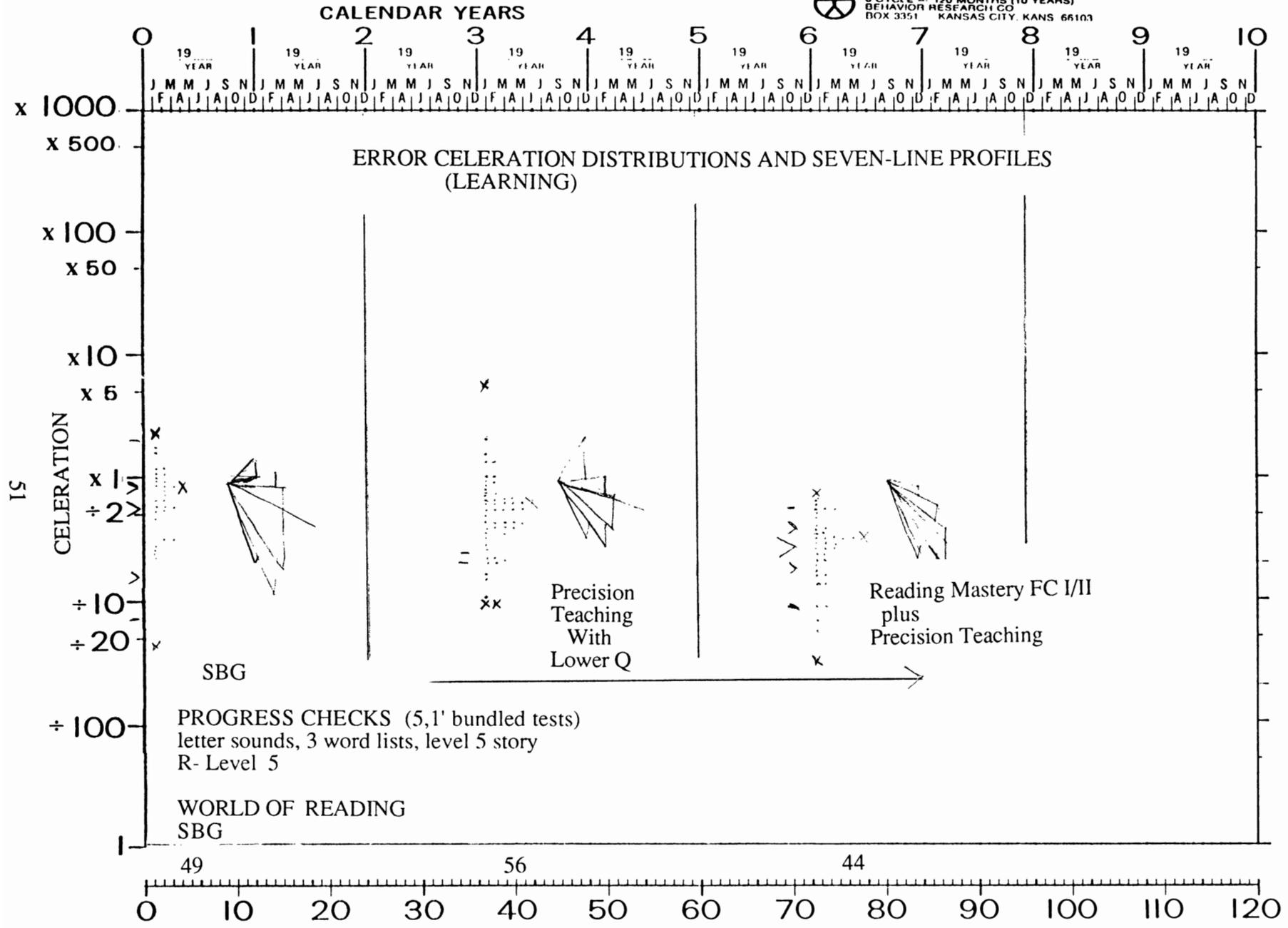


CHART 9

SUPERVISOR			SUCCESSIVE CALENDAR MONTHS				Pupils		Say Sound/Word	
Tellari			Pardue/Wall				BEHAVIOR		AGE	
ADVISER			MANAGER						GRD 1	
Camelot Elem.			Volunteers		Volunteers		Neely			
DEPOSITOR			TIMER		COUNTER		CHARTER			

Small dots to either side of the vertical line represent ten-percent points above and below. Finally, ends of the vertical line represent the highest and the lowest pupil error rates.

Chart 11 shows five-line learning profiles for the middle, quarter, and ten-percent points shown in Chart 10. The procedure for drawing the five best-fit learning lines through their respective quantile points is the same as for drawing Tatyana's learning lines in Charts 1, 2, and 7. Chart 11's error learning lines do not show any specific pupil's learning rate, but rather the specific point rate-of-change for each class.

The middle error learning line represents middle-point growth for each group. The lines directly above and below represent quarter-point growth. Highest and lowest lines represent ten-percent-point growth. One can read the respective error learning rates, (*i.e.*, error-response change per minute, per month, per half-year) for each year in the lower half of the Chart.

Learning Pictures. Charts 1 and 2 show Tatyana's seven learning picture pairs. All (1977) and Sokolove's (1977-1978) pupils descriptively named the first three Chart 1 pictures and the first two Chart 2 pictures, *Cross-over Jaws*. They named the last Chart 1 picture, *Climb*, because fluency is climbing away from the maintaining low-frequency errors. They named the last Chart 2 picture, *Take-off*, because the fluency line is taking off away from the maintaining, mid-level errors.<sup>1</sup> With instruction and more practice, Tatyana could turn her *Take-off* into *Cross-over Jaws*.

Chart 3 shows five learning picture pairs for five, one-minute bundled tests from the '91-92 first-grade class. Seira's picture is *Jaws* with a wide hinge. Monica's picture is *Cross-over Jaws*. Jessie's picture is *Take-off*. Sabrina's picture is *Mid-level*. Stacie's picture is *Up-hill*. The first two pictures show reading skill attain-

<sup>1</sup> The errors, or learning opportunities, of Tatyana's *Climb* and *Take-off* pictures do show decelerating and accelerating lines, but they change so slightly across the months that they were considered, here, as maintaining x1.0.

ment. The last three pictures, Jessie's, Sabrina's, and Stacie's, indicate skill difficulty for decoding unknown words, and with no projection for improvement.

After counting the three years' learning pictures, we see the years' '90-91 and '91-92 have 28% and 33% of their learning pictures, respectively, showing maintaining or increasing errors. These pictures look like Jessie's *Take-off*, Sabrina's *Mid-level*, and Stacie's *Up-hill*. The *Reading Mastery-Precision Teaching* '92-93 class had 100% *Cross-over Jaws* showing all pupils with improving accuracy. All '92-93 pupils' decoding skills were improving with effective instruction, practice, and informed progress.

## Discussion

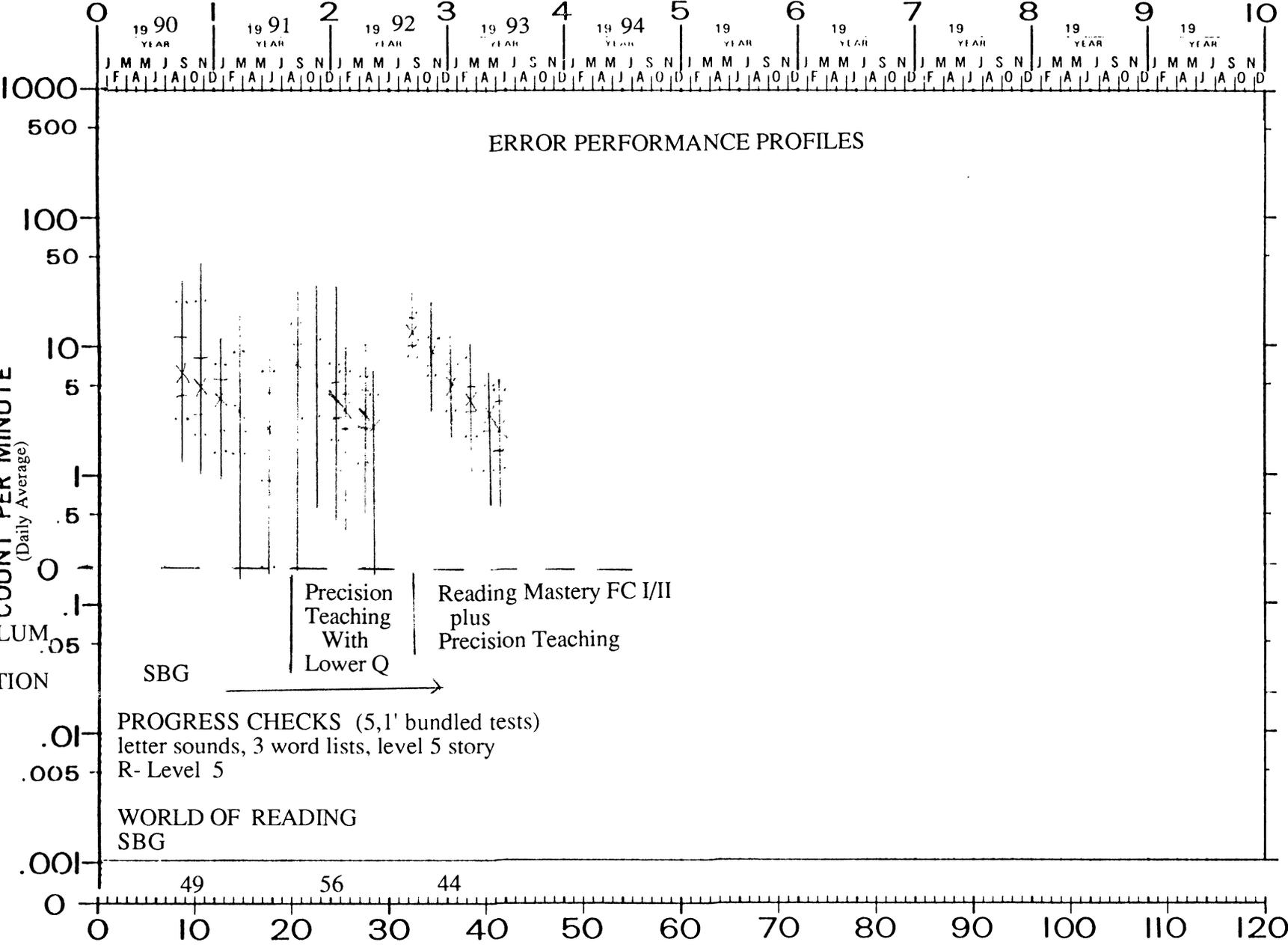
Review of past literature showed no functional difference among traditional reading basals. Chall (1967, 1977) cited that teachers perceive missing components in whatever program they use and insert that missing instruction and practice. Such additions resulted in nearly the same programs. Moreover, most publishers loosely design their series' curriculum and instruction, and teachers ambiguously interpret the loose design.

Neely and Lindsley (1978), while measuring three years of pupil performances and learnings with 17 different reading curricular materials, noted that traditional basals showed the same learning results with special education pupils.

Project Follow Through assessment showed that programs presenting highly structured instruction that had a tight teacher-performance requirement with practices that are "behavioral" produced the best readers. Adams (1990), building on Chall's work, lists effective reading development traits for which basals should aspire.

This research lead Camelot's Chapter 1 Steering Committee to select SRA's Direct Instruction *Reading Mastery Fast Cycle IIII* Series. The members counted on the curricular and instructional design to make a difference.

CALENDAR YEARS



53

CURRICULUM AND INSTRUCTION

5 min.

CHART 10

SUPERVISOR		Tellari	Pardue/Wall	SUCCESSIVE CALENDAR MONTHS		Pupils	AGF	Say Sound/Word	
DEPOSITOR		ADVISER	MANAGER	Volunteers	Volunteers	BEHAVIOR	GRD 1	LABEL	COUNTED
		Camelot Elem.		TIMER	COUNTER	Neely			
		AGENCY				CHARTER			



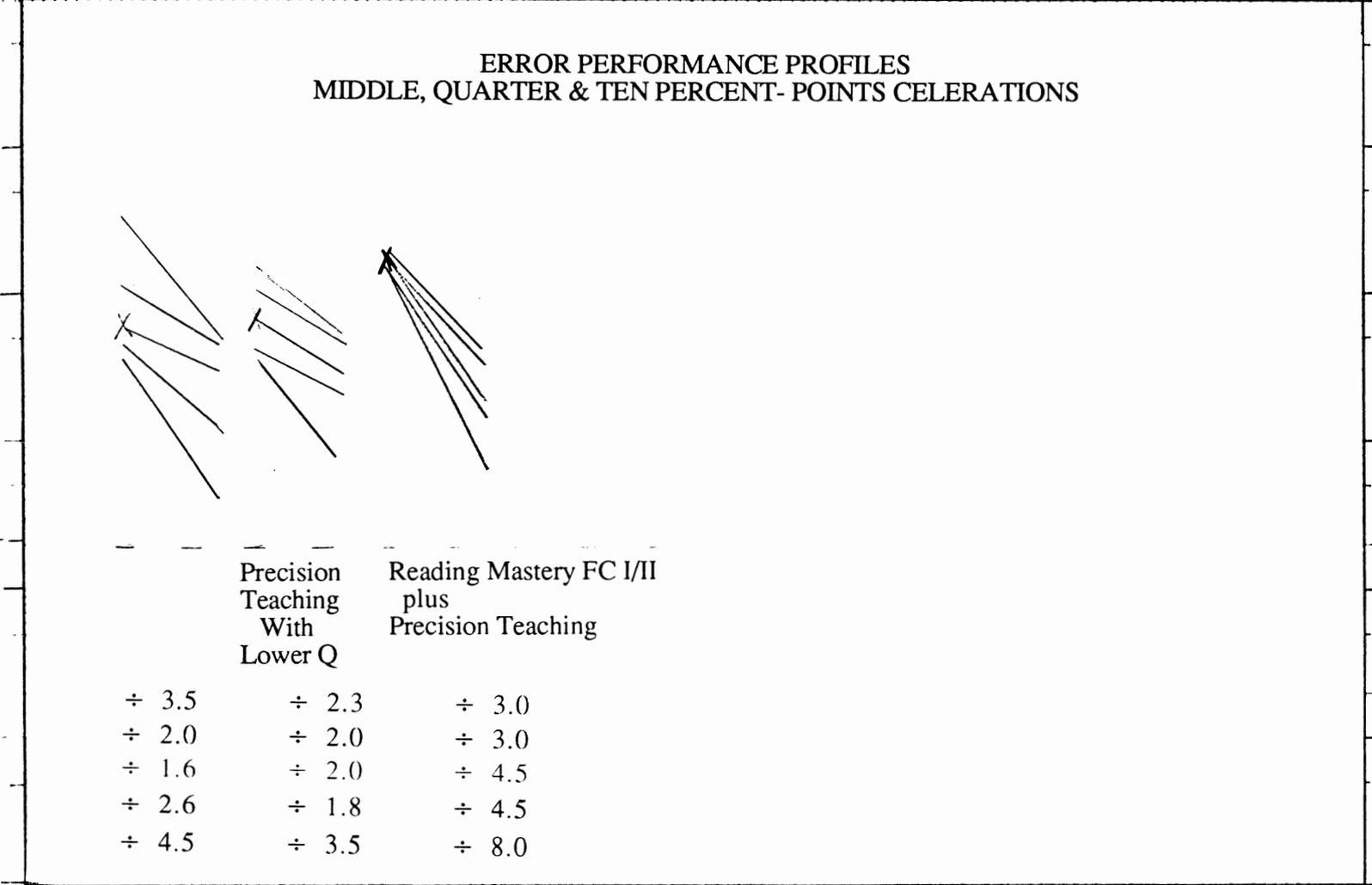
CALENDAR YEARS

0 1 2 3 4 5 6 7 8 9 10  
 19 90 19 91 19 92 19 93 19 94 19 19 19 19 19 19  
 YEAR  
 J M M J S N J M M J S N J M M J S N J M M J S N J M M J S N J M M J S N J M M J S N J M M J S N J M M J S N J M M J S N J M M J S N

ERROR PERFORMANCE PROFILES  
 MIDDLE, QUARTER & TEN PERCENT- POINTS CELERATIONS

COUNT  
54

0



5 min.

	Precision Teaching With Lower Q	Reading Mastery FC I/II plus Precision Teaching
÷ 3.5	÷ 2.3	÷ 3.0
÷ 2.0	÷ 2.0	÷ 3.0
÷ 1.6	÷ 2.0	÷ 4.5
÷ 2.6	÷ 1.8	÷ 4.5
÷ 4.5	÷ 3.5	÷ 8.0

49 56 44

0 10 20 30 40 50 60 70 80 90 100 110 120

SUCCESSIVE CALENDAR MONTHS

SUPERVISOR		Tellari	Pardue/Wall	Pupils		AGE	Say Sound/Word	
ADVISER		Camelot Elem.	Volunteers	Volunteers		GRD 1	LABEL	COUNTED
				Neely				

Researchers also find letter naming fluency to predict reading development success. Adams (1990) summarizing Chall's research, the USOE First-Grade Studies, and others, cites, "...the speed with which [pupils] can name individual letters both strongly predicts success for pre-readers and is strongly related to reading achievement among beginning readers." She cautions that skill in naming letters is not *causal* to reading success, but *predictive* to reading success.

The three classes came from the same neighborhood population, though the third year had an increased ESL influence. The three first-grade classes' letter naming was similar in September and remained similar in June. It is reasonable, then, to assume that all three first-grade classes should progress, similarly in reading skill development. With all curriculum, instruction, and practice being the same, the learning pictures for these similarly endowed pupils should be statistically the same from year to year.

However, after a year's kindergarten SBG *World of Reading* readiness instruction, the '92-93 class was well behind the '91-92 class, and even further behind the '90-91 class in reading readiness skill fluency and accuracy. Add-on events in first grade intervened to alter the learning trends. An add-on event of Precision Teaching's daily practicing *by*, and reporting *to*, the most-at-risk pupils of the '91-92 class promoted catch-up learning rates.

Add-on events of *Reading Mastery, Fast Cycle III* and Precision Teaching's daily practicing *by*, and reporting to 44 most-at-risk pupils promoted catch-up learning rates that propelled the group from significantly behind to significantly beyond the '91-92 class, and just beyond the '90-91 class.

The May first-grade scores of the Iowa Test of Basic Skills (ITBS) also show the above class end-of-year achievement relationships. The ITBS has no provision to show lower September readiness skills, nor the pupils' progress speeds (learning rates) to catch up. Precision Teaching's measurement and Charts do show the pupils' beginning reading readiness skills. The Charts show the pupil's learning rates (the slope

of the learning lines). The Charts also show the pupils' June reading skills.

The '91-92 most-at-risk pupils' steeper learning rates show what educationally effective practice design can do. The progress of the 92-93 class, starting lower, but exceeding or equaling the other classes' reading skills, shows what educationally effective curriculum, instruction, and practice design can do.

The daily measurement of 92-93 pupils' reading *Reading Mastery's* story-of-the-day showed the January entry reading around 25 correct words-per-minute in June. Four read their story-of-the-day in June, around 50 correct words-per-minute. The remaining 39 pupils met or beat our 70 to 90 words-per-minute aim range by reading in June between 70 to 180 correct words-per-minute. Accuracy for all was near perfect to perfect.

Objective measurement confirms the subjective observations of the higher grade teachers, noting the more accomplished '92-93 first graders' reading skill attainments. Objective measurement confirms the classroom visitors' inability to discern the '92-93 ESL pupils from the other pupils in June.

The downward trend in starting lower after kindergarten and entering first grade is correctable by instigating *Reading Mastery* Direct-Instruction and Precision Teaching practice and measurement earlier--as in Kindergarten and Head Start.

Charts 3 and 6, document Camelot's decreasing September reading readiness skills. Camelot's increased ESL population adds to the school's language development needs. Mathematics skill building always needs fortification.

Schools that start Direct Instruction programs in preschool and kindergarten, and continue with these programs, show highly skilled pupils, afterwards. Some time ago, the Seattle School District evaluation department discovered that a disproportionately high percentage of black kids in the district's gifted program had attended the

District's CAMPI program. The CAMPI schools are a totally Direct Instruction pre-school-kindergarten program (Engelmann, 1992).

Wesley Elementary is another total Direct Instruction school (SRA, 1991). Wesley is in the center of one of Houston's poorest neighborhoods. Virtually all of its pupils come from low income backgrounds; the majority receive free lunch. The number of free lunches determines eligibility for Chapter 1 monies because lack of income correlates highly with the educationally impoverished. Because of Wesley Elementary's achievements, the school was rendered ineligible for Title 1, now Chapter 1, services in spite of their free lunch count.

Parents throughout North America are teaching their bright three-and-a-half year olds, and average or better four year olds, to read in 100 easy lessons. The parents are using a book entitled *Teach Your Child to Read in 100 Easy Lessons* patterned after the *Reading Mastery I* program (Engelmann, Haddox, & Bruner, 1983).

The reports for ...*100 Easy Lessons* are exciting. One such experience with ...*100 Easy Lessons* is right here in Federal Way. The youngster, in kindergarten, finished the program by his sixth birthday in late October. The youngster's dad, also his teacher, shares his son's Precision Teaching practice results showing extraordinary learning. Dad and son share and celebrate their accomplishments together--and they will, forever.

Pupils find motivation by their progress shown on their own Charts. Stronger dedication to practice tasks comes from pupils' charting their own performances. Stronger ownership of practice tasks comes from pupils' viewing and discussing ways for improving. Lindsley reports, "Many teachers have found that behavior changes are much greater when students take such an active role" (1990).

In the classroom daily skill-practice measurement shows the teacher a pupil's current performance, learning rate, and aim. The Standard Learning Chart projects future performance. A decision to continue or change tactics to meet or beat an aim is possible at the moment of projec-

tion, rather than after a unit is over. Pupils' self-charting daily and teachers' viewing at least weekly have a decided learning improvement advantage over classrooms and programs that do not.

Periodic evaluations of groups provide for more current administrative decisions, as well. Pupils' weekly learning line collections traced from their Daily Standard Learning Charts show periodic evaluations. Monthly Standard Learning Charts as shown in this report, and Weekly Standard Learning Charts show periodic evaluations.

Standard Chart recording also serves as memory of what works and what does not work. Both tenured and new decision makers can tell what programs to keep and what to throw away.<sup>2</sup>

The Federal Way School District should demand proven educationally effective curriculum, instruction, practice, and measurement programs that will ensure all its pupils and parents with accomplishments and celebrations. This Camelot experience pilots the way.<sup>3</sup>

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<sup>2</sup> So long as school districts are permitted to construct obstacles through their guidelines and their mandated practices, there will be no excellence in education. An occasional exemplary program will spring up, but it will die, and the administration will later have no memory of its life or its death, because the people who compose this administration will be new people with new and rich ideas, based on the latest opinions about how kids learn. (Engelmann, 1992).

<sup>3</sup> The Camelot pilot is dead, however. A queen and prince of Whole Language captured and rule the kingdom. All the Lords and Ladies are bent to their will, but continue to receive their customary rations. Only the children surrounded by glitter and fanfare receive less fare, and suffer.

Unfortunately, there are no plans to continue enhancing the Camelot SBG, Whole Language driven and sight based *World of Reading* with Direct Instruction's *Reading Mastery* or with Precision Teaching's practice and measurement techniques. The pilot is dead.

## Conclusions

1. The SBG *World of Reading* level 1-3 and the *Reading Mastery I* are not appropriate for September first-graders who already read fluently. Fluent and accurate pupils can profit from more challenging levels.
2. *Reading Mastery I* followed by *Reading Mastery II* is more appropriate than *Reading Mastery, Fast Cycle III* for the more at-risk pupils.
3. Precision Teaching assisted in faster '91-92 at-risk pupils' fluency development (x1.4 faster than the class' average learning).
4. *Reading Mastery* and Precision Teaching combined to produce faster '92-93 fluency development (x1.8 and x2.0 faster than the previous classes' learnings, respectively).
5. *Reading Mastery* and Precision Teaching combined to produce faster '92-93 accuracy development (x1.8 faster than the previous classes' learnings).
6. Teachers are not the cause of faulty reading development. The same teachers taught all three years.
7. Labeled pupils (e.g., special education, ESL, Chapter 1) learn to read effectively with effective curriculum, instruction, practice, and measurement. The two '92-93 class special education pupils read with the top third of the class. All 13 ESL pupils were June readers, including the January non-reading entry.

## Recommendations

1. Continue the first-grade pilot *Reading Mastery, Fast Cycle III* Direct Instruction program plus Precision Teaching's pupil practice, pupil response, and pupil learning measurement to enhance Camelot's daily Whole Language training for the '93-94 school year. The materials are all in place, but currently stored.
2. Identify the most at-risk Camelot first-graders and place them in the *Reading Mastery I* sequence as September or October data indicate.

*Reading Mastery I* program is now available to Camelot through a Chapter 1 summer purchase.

3. Identify the most at-risk Camelot first-grade ESL pupils and place them in the appropriate Direct-Instruction Language program. *DISTAR Language I* is now available to Camelot through a Spring, '93 gift from Camelot's PTA, but is also in storage.
4. Beginning in September or October, use the Direct Instruction *DISTAR Language I* program with identified Camelot Kindergarten ESL youngsters.
5. By just before winter break, begin *Reading Mastery I* in Camelot's Kindergarten to all pupils to better prepare them for first grade in '94-95.
6. Continue Direct Instruction *Reading Mastery* instruction with identified Camelot second graders.
7. Use currently trained *Reading Mastery* staff at Camelot to train the Kindergarten and new Basic Skills teacher(s). Training tapes are available at Camelot, and contact with SRA might well provide Direct Instruction trainers, again.
8. Extend the Camelot pilot Direct Instruction and Precision Teaching programs plus above recommendations to FWSD's other elementary schools, especially those with high numbers of at-risk pupils (for whatever reason), but not exclusively. All non-readers will learn through Direct Instruction *Reading Mastery* series. All learners will increase their performances and learning rates with Precision Teaching's daily practices and Chart interaction. Chart viewing will provide teachers, administrators, and school board members a recorded memory for educationally sound decision making.
9. Raise district expectations by setting the goal that all pupils will learn to read by the end of first grade.

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