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Progress Monitoring of Student Learning: Case Studies from the Classroom

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Contents

Preface

This monograph, focusing on progress monitoring of basic skills, represents the culmination of a full year's worth of effort by all teachers who authored a student case. In the beginning of the 1992-1993 school year, teachers within the Educational Service District 112 in Washington signed up for a series of monthly workshops on classroom-based assessment. From that first meeting in September through the last meeting in June, the group assembled to learn how best to capture student progress and achievement. At the end of the year, the workshop was evaluated by having teachers rate the utility/quality of several training and workshop components and write about some of the positive features as well as some of the problems. Following are a few representative "sound bites" from this evaluation.

> *It reinforced the idea that students should not just grow haphazardly without monitoring and adjustment. It forced me to begin analyzing students' progress in reading, writing, mathematics and the acquisition of social/life skills.*
>
> *I liked the way the testing blends in with the daily curriculum. I liked the qualitative/quantitative aspects to give an overall picture. I like the use of clear graphs, which can be used by staff assistants and students and is easily interpreted by classroom teachers and parents.*
>
> *I found that the graph "showed" me what progress my student was making and instead of just making it and putting it away, I will use large graphs, with color, on the wall so they are always visible. I will use them to improve my instruction! This was a great class to take my first year as a life skills teacher.*

While the entire transcription of all comments have been reported in an accompanying document (along with bar charts of the ratings), it is important to point out a fairly common reaction, of which the above quotes are typical. Teachers went through a considerable struggle in developing their own measurement systems for the student cases. Many of their early efforts were characterized as without direction, frustrating, uncertain, etc. Yet, over the course of the year, it was also evident that most of them had become proficient in assessing student performance and progress.

The workshops incorporated great diversity among the group of teachers: background experiences, settings, students, etc. The entire range of special education was involved in the monthly workshops, including physical therapists, school psychologists, speech and language therapists, early childhood interventionists, and all sorts of teachers of students with mild to

severe disabilities. As you can imagine, they worked with students from various ages and therefore in different educational settings, from preschools to high schools and everywhere in between. With such different agendas, the workshops had to focus on teachers designing sensitive measurement systems that captured student performance and progress rather than uniformily establishing them. Although a range of different examples was presented so teachers would have something concrete to work from, these examples were more oriented around basic skills assessment in reading and writing for elementary students. Only later in the year, after teachers had begun developing and implementing their assessment systems, was the workshop able to take advantage of their pioneering efforts and allow them to learn from each other.

This monograph is an extension of these workshops and represents an effort to jump start others in developing appropriate measurement techniques for students with disabilities. Presently, not many examples of such systems are available in the market place. As you read the different cases, you will surely see something that applies to your situation which most likely has most of these elements in place:

1. Connected to instruction,
2. Reflective of an important skill that allows the student to function,
3. Built on student skills that requires them to produce the response, and
4. Capable of repeated implementation over time (with alternate forms).

Such characteristics were first articulated by Deno and Mirkin (1979)† and have come to reflect the essence of classroom-based and curriculum-based assessment and measurement.

We hope the cases included in this monograph can be useful as examples. However, it would be a mistake to take them too literally or to consider them as finished products which could not be improved. In fact, one of the most frustrating processes of working with an inductive approach in the workshops, was that by the time the teachers were more certain exactly what it was they really wanted to teach and how they wanted to capture learning outcomes, the year was over. And a new measurement system needed to be developed. Likewise, in a few of the cases, teachers switched measurement systems in mid-year because the feedback they were getting from their assessments was not appropriate. Sometimes the measure was not sensitive, had an artificial ceiling or floor, moved in increments that were too large, lacked quantitative or qualitative components, or had any number of other

†Deno, S. L., & Mirkin, P. K. (1979). *Data-based program modification: A manual.* Reston, VA: Council for Exceptional Children.

problems that can crop up in developing good measures. Yet learning occured in all cases, if not documented in student progress, at least considered in teacher perceptions.

One final thought. As teachers move away from published tests that narrow curriculum and instruction and move to classroom measures that focus and expand instruction and assessment, the language used to communicate outcomes will become less oriented around arbitrary standards and more reflective of student needs. Many of the cases in this monograph illustrate this point.

You will see many teachers describing the student in each case within the first few paragraphs. Often, terms and phrases are used such as: "He was functioning at the 2.3 grade level in reading, as measured on the Woodcock-Johnson." "On the Brigance, Sally performed at the K.8 level." Although this kind of language is used frequently in special education and is often built into Individualized Education Programs, such terms generate misconceptions. Reducing a student to a normative number has no meaning and cannot be used to diagnose their individual needs, structure appropriate instruction, or evaluate learning outcomes.

In contrast, every case in this monograph ends with a graph with a display of data that are individually-referenced and anchored to a specific skill that has been deemed important for the student. These skills represent other requisite skills that are within the student's grasp and offer a challenge for acquiring new skills. The goal is for students to access different environments and interact better with others. Rather than comparing the student to others, the student's performance is compared to itself, over time. The reference changes so that any one measurement value accrues meaning by comparing it to previous (and subsequent) values. Suddenly, the playing field is level. And, equally as important, real behavior is being discussed. Rather than talking about items on a test, teachers are talking about students in terms of their improving skills in writing compositions, reading real books, and solving actual math problems. Emphasis shifts from the score to the skill.

In the end, this monograph represents an effort to change how we communicate about students. And the teachers who authored individual chapters are to be commended for their efforts and perseverance.

JT
EK

Progress Monitoring of Written Language

This case study was developed by regular, as well as special education teachers, with consultation by the school psychologist. Writing samples were taken from the student and scored on the total number of words spelled correctly, as well as on a qualitative scale to measure progress in written language.

Student Demographic

Barb was a 13 year old special education student in the seventh grade. She was labeled with mild mental retardation. Barb was described by her teacher as one who had good peer and adult relationships and good social and interpersonal acceptance. She stated that although Barb sometimes displayed a bad "attitude," she was usually able to "get out of it quickly" when encouraged to do so. Most of Barb's behavioral difficulties appeared to be directly related to her academic frustrations. Her teacher indicated that she exhibited a lot of denial about her mistakes and blamed others for them. She was sometimes argumentative but would quit if she was threatened with being sent to the office. On the other hand, her teacher mentioned, Barb could be appropriately assertive when asking for help with both academic and personal matters.

Program Description

Each day, Barb had five periods of regular education classes, two of which were taught collaboratively by her special education teacher, and two of which reflected special education support provided in a "pull-out" model. This gave her a total of four hours of special education support each day. She received in-class help for math and written language and pull-out special education support for reading. The other one hour pull-out period was used as a study hall.

Barb was monitored for written language. The specific instructional strategies utilized included spelling tests, sentence diagramming, daily journals, and the analysis and discussion of peer writing assignments on an overhead projector. The special education teacher provided the class with the Northwest Regional Lab written language rubrics to use as references when evaluating each others' papers. All instruction was conducted in a large group (full class) arrangement. The MacMillan English series, novels, movies, and class writings were used as instructional materials. Motivational strategies used included earning cans of pop on a daily and weekly basis, eating lunch with the teachers, a pizza party, and letter grades.

Progress Monitoring System

The overall goal for Barb was to show an upward trend in her writing samples for the number of words correctly spelled, while at the same time increasing her use of writing conventions from a rating of two to a rating of four by the end of the school year. The performance measure consisted of a five minute timed writing sample in which she was required to write on a topic chosen by the educational assistant. These samples were gathered 1-2 times per month using a one-on-one pull-out format.

The instructions given to Barb were as follows:

> *"I want you to write a story for five minutes. Make sure you indent, capitalize, use commas where appropriate, put periods at the end of sentences, and spell the best that you can. Neatness counts. I will pick the topic for your story. All these things I have asked you to do are very important when you write a story, so please do your best. Any questions?"*

The scoring procedures involved counting the number of correctly spelled words and rating her use of conventions. She also was rated on a 1 to 5 scale for her use of standard writing conventions. This scale was adopted from the Northwest Regional Lab materials located in Portland, Oregon.

Results

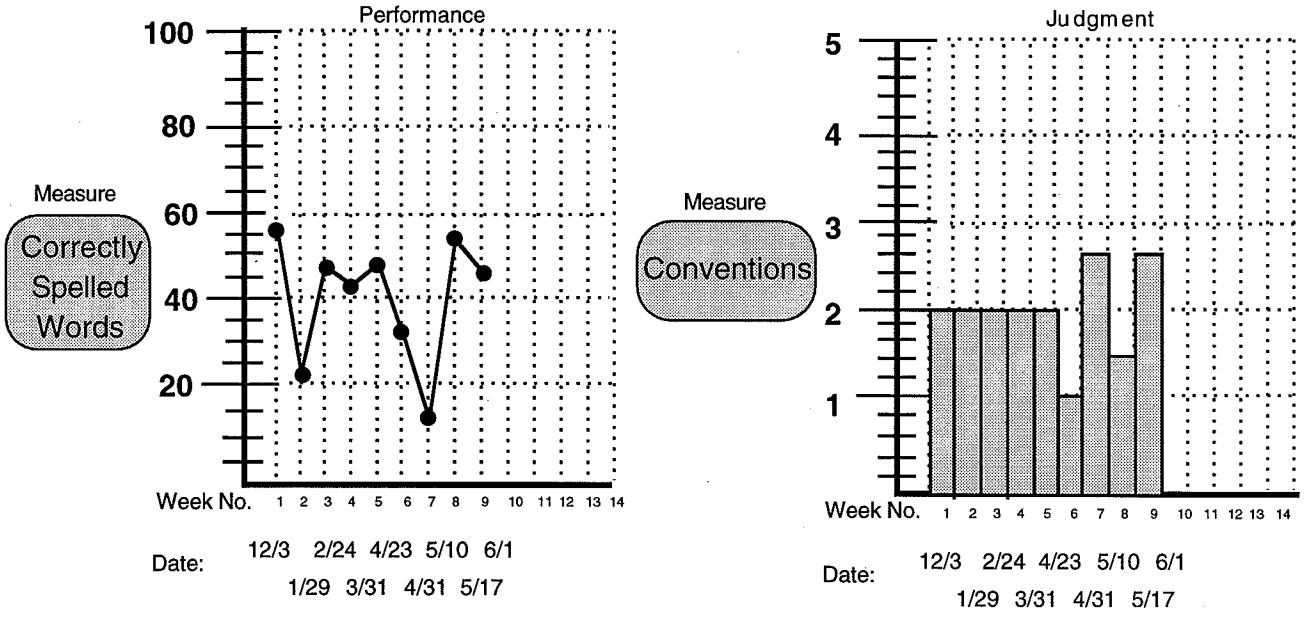


Figure 1. Barb's Progress in Written Language Development

Quite clearly, Barb failed to make any significant gains in terms of the number of words correctly spelled or ratings of use of conventions during the six month sampling period. After dropping below her initial score

of nearly 60 words spelled correctly, Barb only approached her first score thereafter. Barb also failed to show more than minimal improvement in her writing convention skills. Eventually, Barb showed progress but it was too late in coming to note any trend of improvement.

In looking at the data, one might conclude that perhaps the integrated, large group setting in which this student was taught, did not best meet Barb's needs. Specific, individualized or small group help, in conjunction with the instruction that she received in the regular education classroom may have better suited Barb.

Progress Monitoring of Written Language from the Perspective of a Special Education Teacher

In this study, a 13 year-old student's writing productivity was tracked, along with his quality of writing. Because the student was difficult to motivate, the teacher connected Steve to an area cartoonist, which was an interest of the student. The two used cartooning as a medium for written language instruction and use.

Student Demographic

Steve, the case student, was a seventh grader who had an estimated IQ of 134 who had been classified as behaviorally disordered. Generally, when the student was *required* to do anything, he was completely uncooperative and would not complete the task. If given general guidelines and a hand in the development of the instructional program, Steve was able to stay on-task and do very well. Although Steve had a difficult time relating to peers, he was able to relate to adults on a one-to-one basis, or in a small group when the discussion was not academic. He was very interested in writing, but only about what interested him, and he didn't want anyone to comment on what he had written.

Steve lived with his grandmother for six years, who worked three jobs and was rarely available. The teacher felt this living situation profoundly affected the effort and attitude that Steve exemplified at school.

Program Description

Due to Steve's high IQ, he needed a program that was very advanced. When Steve was given simple paper and pencil activities, he would either refuse to work or become so disruptive he needed to be removed from the class.

Once a week the cartoonist and Steve would meet and decide what he needed to write. Then, at the next week's meeting, they would go through Steve's writing and decide what needed to be changed. The final draft was then written. Steve really enjoyed this content and sequence and was willing to work. During the week in class, he would make the suggested edits, then begins work on the next project. He spent about three to four hours per week on the computer writing and editing his stories.

Progress Monitoring System

Steve's progress was monitored using three measures: (a) total number of words written, (b) number of words spelled correctly, and (c) a qualitative judgment on the final product (see Figure 2).

1

Few inventive spelling words. Student cannot read his writing. Words are poorly spaced. Many unrecognizable words.

2

Many inventive spelling words. Student and teacher can read back part of the writing. A few words spelled correctly. Some appropriate spacing.

3

Most high frequency words spelled correctly. Misspelled words are inventively spelled. Student and teacher can read back only part of the writing. Most words spelled correctly. Punctuation may be present.

4

At least half of the words are spelled correctly. Misspelled words are inventively spelled. Teacher can read and understand what is written. Capitalization and ending punctuation is correct at least half of the time.

5

More than 75% of words are spelled correctly. Capitalization and ending punctuation is correct at lest 75% of the time. Student and teacher can read what is written. Words are spaced correctly.

Figure 2. Qualitative Scale for Steve's Written Language

Results

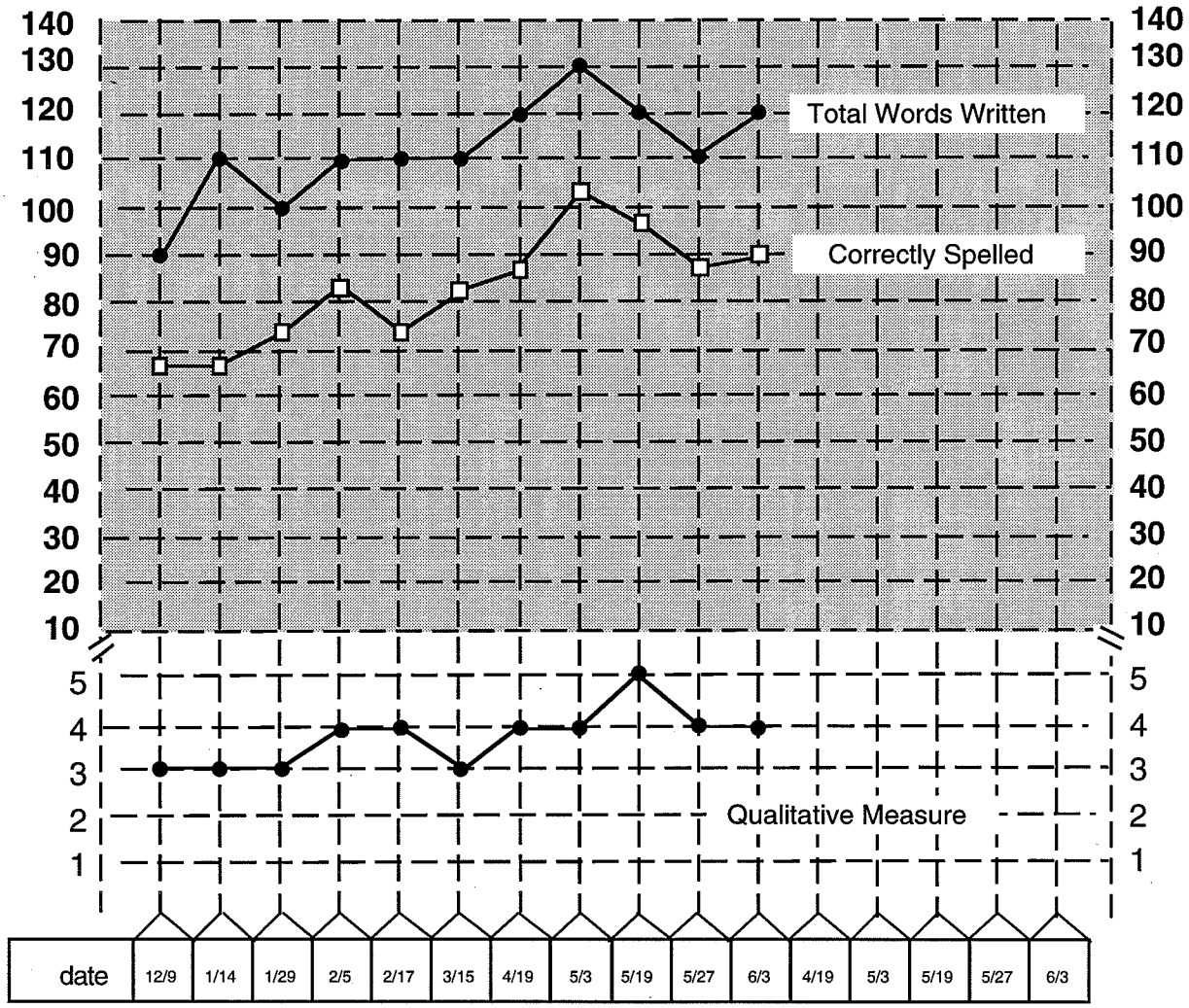


Figure 3. Written Language Progress of Steve

Slight progress was made by Steve in all three areas, although not drastic. Over all, Steve's level of interest heightened, and his writing samples have proven to get better over time. Importantly, these improvements have carried into to his regular education assignments.

Progress Monitoring Applied to a Handwriting Program

This case study describes the progress of a life skill's student in printing her mother's name and the lowercase alphabet. The student, Sherry, was instructed in letter form, size, spacing, and drawing technique.

Student Demographic

Sherry is a nine year old girl with multiple disabilities who has been in special education since pre-school. She is very physically involved, wearing braces on her legs for support. According to the Brigance Inventory of Early Development, her gross motor skills range from 1.0-3.0 years, while her fine motor skills range from 4.0-7.0 years. She reads 25 sight words, but there is very little comprehension. Because of moderate retardation, Sherry needs specific individualized education.

Program Description

Sherry's placement in a self-contained life skills program provides her the individual attention she needs. The program has 10 children, 1 teacher, and 3 limited time staff assistants. Half the day is devoted to academics and the other half to life skills such as housekeeping, hygiene and community services.

Progress Monitoring System

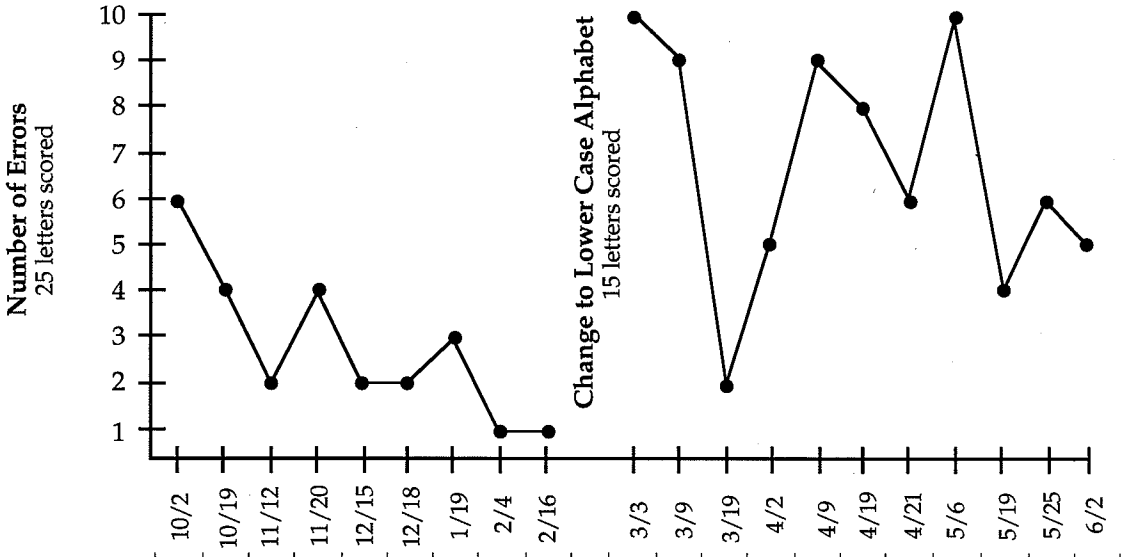
The progress monitoring format being used involves a sampling of handwritten letters critiqued by four criteria:

1. Number of reversals in forming the letter.
2. Extension of the characters more than 1/4" outside of lines.
3. Number of omissions.
4. Number of unevenly spaced letters.

The goal was to get the total number of errors to one (or less) per sample. The same monitoring process was applied to both writing the alphabet and writing her mother's name.

The instructional program was conducted in 20 minute sessions, at least 3 times per week. An assistant usually was present during measurement. Time also was spent working with clay and Legos™ to strengthen Sherry's fine motor skills. To help with letter formation foil was put on a warmed hot plate. Using a crayon, Sherry formed letters, only going as fast as the crayon would melt. This slowed her writing, therefore improving her accuracy, which was very helpful in strengthening Sherry's visualization process.

Results



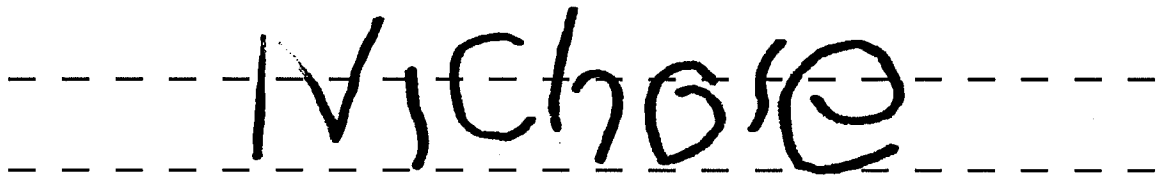
No. of reversals	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0	2	1
Proper Size	6	4	2	2	1	2	3	1	1	15	7	0	1	5	3	3	11	4	3	4
No. of omissions	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0
Unevenly spaced letters	0	0	0	2	1	0	0	0	0	2	2	2	4	4	5	3	0	0	1	0
Total	**6**	**4**	**2**	**4**	**2**	**2**	**3**	**1**	**1**	**21**	**9**	**2**	**5**	**9**	**8**	**6**	**11**	**4**	**6**	**5**

Figure 4. Sherry's Progress in Letter Writing

Sherry was able to decrease the errors in the writing of her mother's name dramatically, from 6 in the first sample to 1 in the last sample (see Figures 4 and 5).

Sherry's Writing Samples

October 2, 1992



February 16, 1993

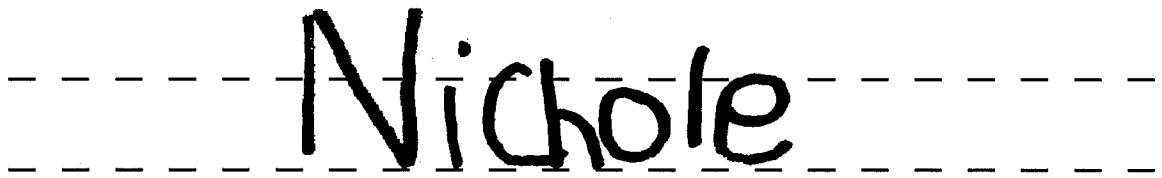
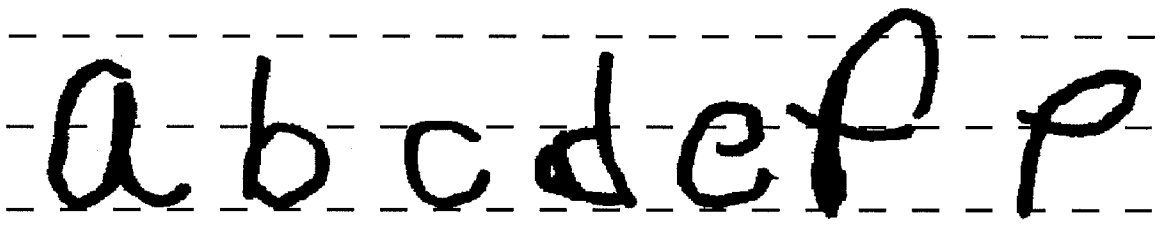


Figure 5. First and Last Samples of Mothers' Name Writing for Sherry

At the time the task was switched from name writing to lowercase alphabet, Sherry's number of errors was expectedly high. Over time, however, Sherry showed progress towards her letter writing skills (see Figure 6.). As can be seen in the writing sample below, Sherry has learned to print the letters smaller and has increased in her maximum number of letters she can print (though one letter is formed incorrectly).

March 3, 1993



June 2, 1993

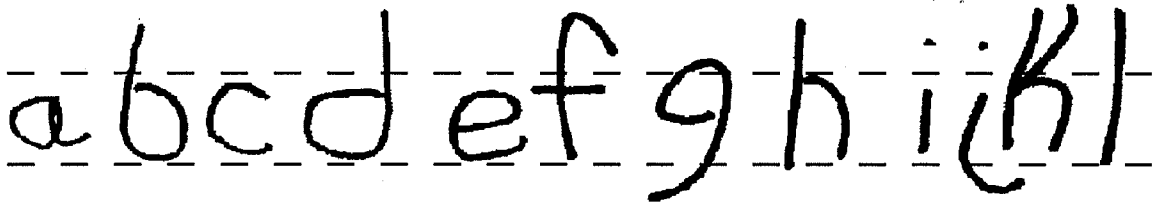


Figure 6. First and Last Samples of Lowercase Alphabet Writing for Sherry

The long term goal for Sherry is to be able to print her own name, address, phone number, and birth date as needed for job applications, and government or community service access forms. Sherry will never be totally independent, but in a group home setting, these writing skills will be beneficial to Sherry. She is very aware of her success and takes pride in her writing.

A Case Study in Written Expression

In this case study, written expression was monitored. Betty was instructed to write a composition, which was then scrutinized using both quantity and quality measures of her written expression. In the end, the total number of words and quality of expression both showed increases, while Betty's over use of run-on sentences and connecting words decreased. The number of thought units, while not specifically measured, also showed an increase. Overall, her writing quality improved in a variety of ways that may or may not have been monitored in this particular case study.

Student Demographic

Betty, the student in this case, was 14 years old and in eighth grade. While she is socially aware of her surroundings and at an appropriate age level in her interpersonal skills, Betty scores low in all academic areas. Betty was labeled as having multiple disabilities. On the *California Achievement Tests*, Betty scored below 3.0 grade level in Reading and below 4.0 grade level in Written Language. She was very outgoing and gregarious, often giggling when working with a friend, which tended to distract other students. Betty often was inappropriately outspoken with both peers and teachers, and has been known to become stubborn. Betty stays on task if working one-on-one or independently, but in group situations has tended to get disruptive.

Program Description

Betty participates in a blended services educational model, and receives English grammar from the "Project Write" materials. She is mainstreamed in three classes; one with a co-teacher, which is modeled as a class within a class. In her three regular education classes, Betty receives instruction from the regular teacher. In the other two monitored areas she was provided instruction in the self-contained classroom with a special education teacher.

Progress Monitoring System

In the self-contained class, Betty was asked to write one of two types of writing compositions. The first type was creative writing and the second was a written story retell. The retell stories were read aloud by the teacher from a children's book, after which the student was given unlimited time to complete the task. Betty usually took two periods to complete her writing. She tended to write her stories using real life experiences; most stories included Spanish names and a Mexican theme. Betty's writing had good content, and therefore was not monitored explicitly. However, grammar, punctuation, and paragraph structure (specifically indentation, over-use of connecting words and run-on sentences) were problem areas which required monitoring. The total number of words written was recorded and a 5-point scale was used to measure qualitative progress (see Figure 7).

1
No punctuation; run-on sentences; improper capitalization; improper use of connecting words
2
Using fewer connecting words; some capitalization
3
No connecting words; correct indentation; occasional capitalization; some periods
4
Most periods in proper places; most capitals following periods; indentation
5
Proper punctuation, capitalization, and complete sentences

Figure 7. Written Expression Rating Scale

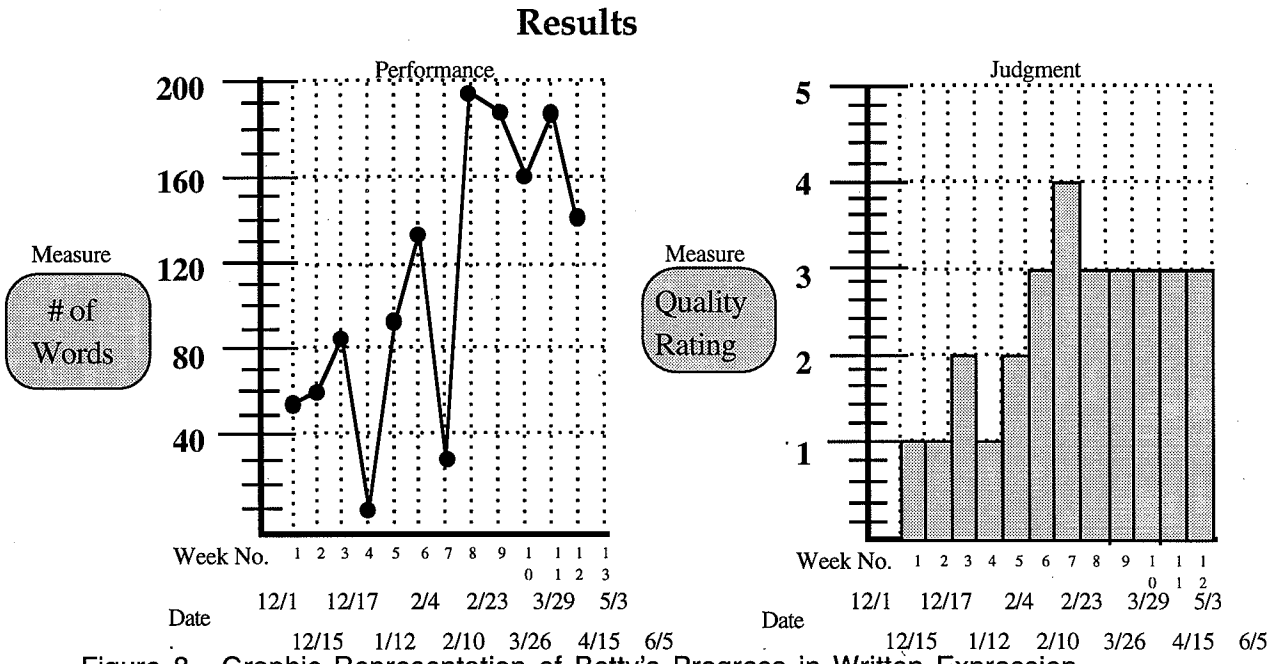


Figure 8. Graphic Representation of Betty's Progress in Written Expression

Over all, growth was shown in all aspects of Betty's written expression. The total words written were measured in the first sample at 57, but peaked at nearly 200. At the same time, the quality of Betty's writing sample increased from a rating of 1 initially, to consistently 3's and 4's. Story length had increased without sacrificing content, and there was progress toward indentation at the story beginning. Later writing samples showed more improvement toward eliminating the word "and," as well as run-on sentences, although the word "so" had been substituted in some cases. There also was improvement in handwriting and use of complete sentences.

Progress Monitoring for Written Language

The two students involved in this study, both seventh graders, were monitored for errors in their spelling, punctuation, and syntax within written expression samples. They were given words and asked to write a sentence with them, using correct capitalization, punctuation, and syntax. The progress of both students was documented and graphed over the entire school year.

Student Demographic

Tim was involved in a car accident when he was five years old which left him paralyzed him from the waist down. He was in a coma for about a week, which caused some brain damage. Additionally, he was born without any muscle control in his mouth, which makes it very hard for him to make sounds. Tim had a severe speech disorder and learning disability, and qualified for special education under the category of Health Impaired. He received services in speech, and occupational and physical therapy. He went to the special education classroom for services in all academic areas. Tim's academic levels were very low. His reading skills were at a 1.7 grade level on the Woodcock Johnson. He had a severe speech problem which affected all reading and writing.

Lilly qualified for special education under the handicapping condition of mild retardation. She received services in reading, math, and written language, and until March, 1993, had been receiving services in speech.

Lilly was mainstreamed into physical education, science, social studies, and shop. She went to the special education room for help in reading and her context area books, and for help completing daily work and tests as needed. She interacted socially in her peer group very appropriately. As based on the Woodcock Johnson, Lilly's academic levels (in grade equivalent scores) were as follows: reading was 3.3, math was 3.2, and written language was 5.3.

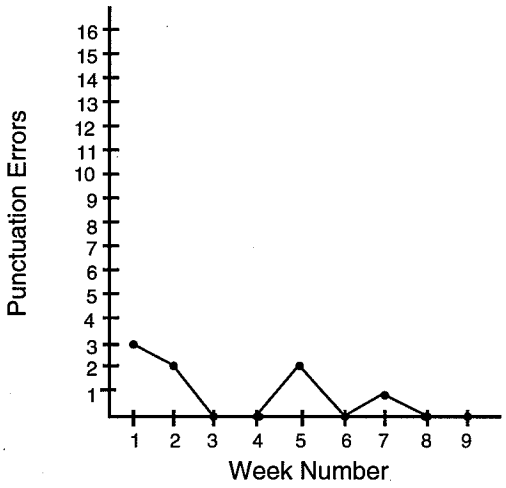
Program Description

Both Tim and Lilly were given 10 spelling words at their level each week from the *Scott Forsman Spelling book.* They were required to write a list of words to go home with the student on Monday; Tuesday they were required to write each word five times; on Wednesday, the students wrote a sentence for each word with a practice test on Thursday; on Friday a final test was given. When looking at their work, their progress in spelling errors, punctuation errors, and syntax errors was monitored.

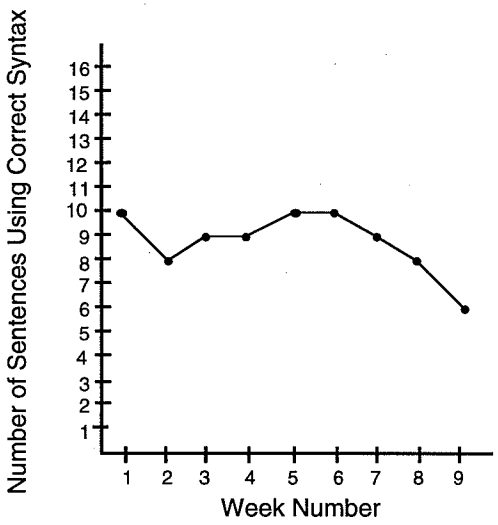
Progress Monitoring System

The monitoring program was based on information from the sentences written on Wednesdays. The special education teacher charted the number of punctuation errors, words misspelled, and sentences using correct syntax. These results are graphed on the following page.

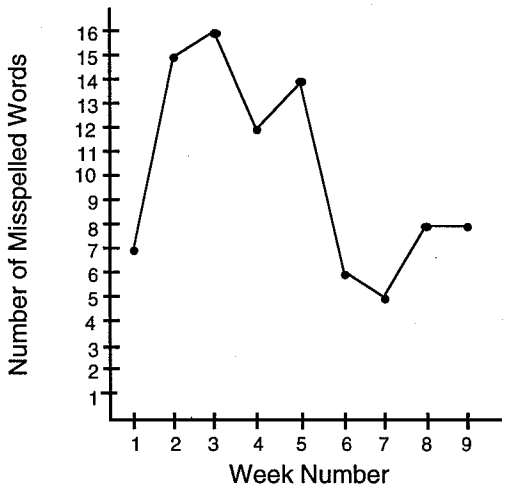
Results



Date	Week No.	Type of Errors	Areas to Teach
1/15	1	No commas	
1/28	2	Missing period	
2/3	3	100%	
2/17	4	100%	
2/23	5	No apostrophe's	
3/3	6	100%	
3/10	7	Missing exclamation	
3/24	8	100%	
4/21	9	Zero errors	

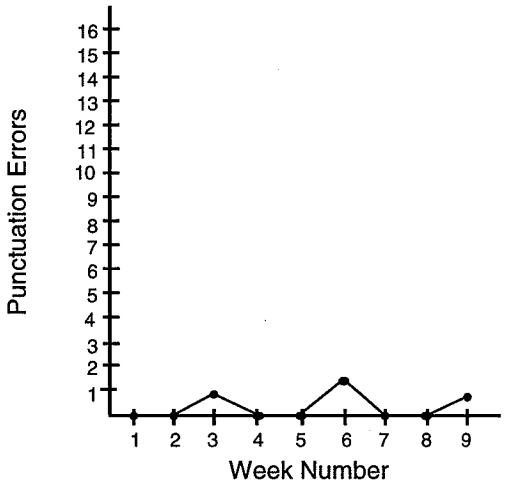


Date	Week No.	Type of Errors	Areas to Teach
1/15	1	Zero errors	
1/28	2	2 words missing	Reread sentence
2/3	3	1 word missing	
2/17	4	Wrong form of verb	Subject/verb
2/23	5	Zero errors	
3/3	6	Zero errors	
3/10	7	1 word missing	
3/24	8	2 words missing	
4/21	9	Words missing	

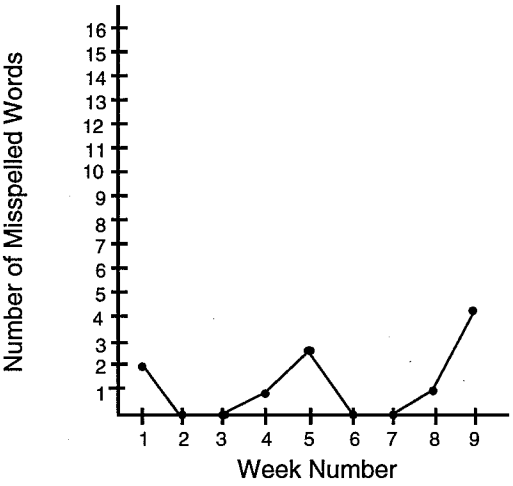


Date	Week No.	Type of Errors	Areas to Teach
1/15	1	7	
1/28	2	15	
2/3	3	16	
2/17	4	12	
2/23	5	14	
3/3	6	6	
3/10	7	5	
3/24	8	8	
4/21	9	8	

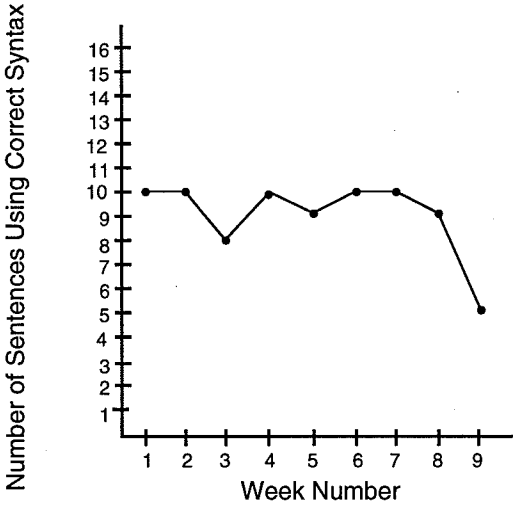
Figure 9. Tim's Progress in Written Language Measures



Date	Week No.	Type of Errors	Areas to Teach
1/15	1	Zero errors	
1/28	2	Zero errors	
2/3	3	question mark	
2/17	4	Zero errors	
2/23	5	Zero errors	
3/3	6	2 commas missing	
3/10	7	Zero errors	
3/24	8	Zero errors	
4/21	9	1 error - apostrophe	



Date	Week No.	Type of Errors	Areas to Teach
1/15	1	2 misspelled words	
1/28	2	Zero errors	
2/3	3	Zero errors	
2/17	4	1 error	
2/23	5	3 errors	
3/3	6	Zero errors	
3/10	7	Zero errors	
3/24	8	1 error	
4/21	9	5 errors	



Date	Week No.	Type of Errors	Areas to Teach
1/15	1	Zero errors	
1/28	2	Zero errors	
2/3	3	2 sub./verb disagree	
2/17	4	Zero errors	
2/23	5	1 word missing	
3/3	6	Zero errors	
3/10	7	Zero errors	
3/24	8	1 word used incorrectly	
4/21	9	5 correct sentences	

Figure 10. Lilly's Progress in Written Language Measures

The data indicated that Tim's progress was sporadic, although downward trends in both spelling and punctuation errors were present. Tim's teacher observed that many of Tim's written language errors stemmed from his severe speech problems, therefore, progress was expected to be slower than usual. The teacher added that Tim would omit words in his speech that would also be omitted in his writings. Lilly, on the other hand, was higher functioning and did fairly well with written work. Once she was told that her errors were being charted, she was much more careful.

Progress Monitoring of Written Language in a First Grade Classroom

This case is about monitoring the progress of first grade students on original writing as it was received through daily journals. Three students were followed; one special education, one LAP/Chapter 1, and one general education. All students made progress in their goal of writing original ideas that were comprehensible to others.

Student Demographics

Willis was seven years old and came from a family with both parents present. He was the third of four siblings, all of whom had qualified for special education services. He had difficulty getting along with other students and communicated very slowly. He was receptive to instruction and responded to intrinsic rewards of his own progress. Willis qualified for resource room assistance in math, reading, and written language. He started first grade recognizing 70% of the letters of the alphabet and knew the sounds of 30% of the letters he could recognize. He had no word attack skills or working knowledge of phonics. He could write most letters when dictated, and wrote in all capital letters. In September of his first grade year, he was rated K.8 on the written language portion of the Woodcock Johnson test. He was the only student in this study who had an Individualized Education Program.

Rose, a six year-old, was from a family where both parents were present. She was the eldest of three children. She qualified for LAP/Chapter 1 upon teacher recommendation and district-made test results. She qualified for LAP in reading and written language. Rose did not have much inner motivation to learn and gave up easily when a task became difficult. She entered first grade recognizing 80% of the letters of the alphabet and knew the sounds of 80% of the letters she could recognize. She did not know how letters were formed, including those in her name. Throughout first grade, her writing included reversals. She was given no standardized tests, which were usually reserved for identifying special education students.

Marge, who also was six years old, came from a family where both parents were at home. She was the second of four daughters. She was considered an "average" first grader. She entered first grade knowing how to form all her letters and knew their corresponding sounds. Her handwriting was very neat when she was copying written sentences, although she became more sloppy as she progressed with more original thoughts. Her invented spelling became more accurate.

Program Description

As the school was located in a small, rural community, the majority of students were bussed to school. All special education students were gradually being mainstreamed into the regular classroom. There was no pull-out program of any kind. Special needs were met by having a non-certified adult assistant in the classroom two hours each day, to serve three students who qualified for the resource program and five who qualified for LAP/Chapter 1. The children did not receive a separate curriculum, although the regular curriculum was altered to meet the needs and developmental level of each child. Language and literacy was taught with a modified whole language approach. The *McCracken Spelling Through Phonics* and *Success in Reading and Writing* were used as instructional materials.

The role of the special education teacher in the building was based on consultation in the integrated program and instruction in the pull-out program. She had only limited time to meet with the instructional assistants or regular classroom teachers.

The progress monitoring system for this case was developed to include all students in the classroom. It was designed to be quick and easy.

The instructional assistant was in the classroom 60 minutes, 4 days per week during the language instruction block where she worked with "program" children (receiving services from LAP and special education). She circulated around the room and assisted them with regular curriculum work. She also met with children in heterogeneous groups for guided reading. The assistant spent a second hour with the students in the afternoon, 4 days each week during math instruction (15 minutes) and art/science/"catch-up" time (45 minutes). During this time, she circulated around the room to assist the program kids with regular curriculum or pulled individuals aside for individualized attention.

Progress Monitoring System

At the beginning of the year, blank paper was distributed to each child for writing and/or drawing. Children progressed to lined paper bound in a wallpaper covered booklet, which served as their journals. When one booklet was full, they received a new journal booklet.

The students were encouraged to write about anything they wanted, with sentence starters provided for the children who had trouble developing ideas. Because classrooms were being integrated, the teacher chose three students to test the monitoring instrument to see if progress could be shown across various levels of ability.

Everyday, students were given 15-20 minutes to write an entry and draw an illustration to match, then read it to two people (one being the teacher or adult assistant) before turning it in. The journal entries were not edited in anyway or subjected to the steps of the writing process. One aspect of

the goal was to put original thoughts in written form and begin to feel relaxed about original writing. Therefore, invented spelling was encouraged. Handwriting neatness and grammar were only emphasized with students who had developed a comfort level with their writing.

Every two weeks the journals were collected and scored by the staff, both quantitatively and qualitatively. The number of thought units and words written were the quantitative measures, while the use of invented spelling, the ability to read back their own writing, originality, and correct use of grammar and syntax were the qualitative measures.

Results

Date	No. of Thought Units
5/3/93	1 2 3 4 **5**
4/10/93	1 **2** 3 4 5
3/29/93	1 **2** 3 4 5
3/8/93	1 **2** 3 4 5
2/23/93	**1** 2 3 4 5
2/5/93	1 **2** 3 4 5
1/18/93	1 **2** 3 4 5
1/4/93	**1** 2 3 4 5
12/18/92	**1** 2 3 4 5
12/7/92	1 **2** 3 4 5
11/23/92	**1** 2 3 4 5
11/9/923	**1** 2 3 4 5

Date	Number of Words
5/3/93	2 4 6 8 10 12 14 16 18 20 22 24 **25**
4/10/93	2 4 6 8 10 **12** 14 16 18 20 22 24
3/29/93	2 4 6 8 **10** 12 14 16 18 20 22 24
3/8/93	2 4 6 8 **10** 12 14 16 18 20 22 24
2/23/93	2 4 6 **8** 10 12 14 16 18 20 22 24
2/5/93	2 4 6 **8** 10 12 14 16 18 20 22 24
1/18/93	2 **4** 6 8 10 12 14 16 18 20 22 24
1/4/93	2 4 **6** 8 10 12 14 16 18 20 22 24
12/18/92	2 **4** 6 8 10 12 14 16 18 20 22 24
12/7/92	2 4 **6** 8 10 12 14 16 18 20 22 24
11/23/92	2 4 **6** 8 10 12 14 16 18 20 22 24
11/9/923	2 **4** 6 8 10 12 14 16 18 20 22 24

Date	Invent Spell	Read Back	Originality	Syntax
5/3/93	1 2 3 **4** 5	1 2 3 **4** 5	1 2 3 4 **5**	1 2 3 **4** 5
4/10/93	1 2 3 **4** 5	1 2 3 **4** 5	1 2 3 **4** 5	1 2 3 **4** 5
3/29/93	1 2 3 **4** 5	1 2 3 **4** 5	1 2 3 **4** 5	1 2 3 **4** 5
3/8/93	1 2 3 **4** 5	1 2 **3** 4 5	1 2 3 **4** 5	1 2 3 **4** 5
2/23/93	1 2 3 **4** 5	1 2 3 **4** 5	1 2 3 **4** 5	1 2 3 **4** 5
2/5/93	1 2 3 **4** 5	1 2 **3** 4 5	1 2 3 **4** 5	1 2 3 **4** 5
1/18/93	1 2 **3** 4 5	1 2 **3** 4 5	1 2 3 **4** 5	1 2 3 **4** 5
1/4/93	1 2 **3** 4 5	1 2 **3** 4 5	1 2 **3** 4 5	1 2 3 **4** 5
12/18/92	1 **2** 3 4 5	1 2 **3** 4 5	1 2 3 **4** 5	1 2 **3** 4 5
12/7/92	1 **2** 3 4 5	1 2 **3** 4 5	1 2 3 **4** 5	1 2 **3** 4 5
11/23/92	**1** 2 3 4 5	1 **2** 3 4 5	1 **2** 3 4 5	1 2 **3** 4 5
11/9/923	**1** 2 3 4 5	1 **2** 3 4 5	1 **2** 3 4 5	1 **2** 3 4 5

Invented Spelling
1 - Little invented spelling
2 - Attempts at invtd words
3 - Invtd words use correct beginning sound
4 - Invtd words use vowels
5 - Invtd words make phoentic sense

Read Back
1 - Cannot read own writing
2 - Can read back part of text
3 - S & adult can read back most of text
4 - S & adult can read all text
5 - S & adult can read all text at later time

Originality
1 - Copies sample words
2 - Finishes starter w/ 1-2 orig words
3 - Finishes story starter w/ several thoughts
4 - Inconsistent use of story starter
5 - All text uses original thoughts

Syntax
1 - Writes random words
2 - Sentence fragments
3 - Sentences w/o art icles
4 - Sentences w/ articles Some punctuation
5 - Complete sentences w/ articles Some caps & ending marks

Recommendations Encourage guess and go; he's hearing the sounds!

Figure 11. Willis's Progress in Expressive Writing

Although Willis did not consistently increase the number of thought units in his writing, he did use more words. Furthermore, his spelling was more accurate and he could read his own writing. He was using capital letters more appropriately, occasionally using appropriate articles in his sentences. He also was writing original thoughts more often than he was using the sentence starters. Most importantly though, when something of special interest happened to Willis, he was anxious to write about it. When asked to read at a reading conference, his first choice of reading material was an original story he had written.

Date	No. of Thought Units
5/3/93	1 2 3 4 5
4/10/93	1 2 3 4 5
3/29/93	1 2 3 4 5
3/8/93	1 2 3 4 5
2/23/93	1 2 3 4 5
2/5/93	1 2 3 4 5
1/18/93	1 2 3 4 5
1/4/93	1 2 3 4 5
12/18/92	1 2 3 4 5
12/7/92	1 2 3 4 5
11/23/92	1 2 3 4 5
11/9/923	1 2 3 4 5

Date	Number of Words
5/3/93	2 4 6 8 10 12 14 16 18 20 22 24
4/10/93	2 4 6 8 10 12 14 16 18 20 22 24
3/29/93	2 4 6 8 10 12 14 16 18 20 22 24
3/8/93	2 4 6 8 10 12 14 16 18 20 22 24
2/23/93	2 4 6 8 10 12 14 16 18 20 22 24
2/5/93	2 4 6 8 10 12 14 16 18 20 22 24
1/18/93	2 4 6 8 10 12 14 16 18 20 22 24
1/4/93	2 4 6 8 10 12 14 16 18 20 22 24
12/18/92	2 4 6 8 10 12 14 16 18 20 22 24
12/7/92	2 4 6 8 10 12 14 16 18 20 22 24
11/23/92	2 4 6 8 10 12 14 16 18 20 22 24
11/9/923	2 4 6 8 10 12 14 16 18 20 22 24

Date	Invent Spell	Read Back	Originality	Syntax
5/3/93	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
4/10/93	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
3/29/93	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
3/8/93	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
2/23/93	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
2/5/93	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
1/18/93	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
1/4/93	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
12/18/92	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
12/7/92	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
11/23/92	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
11/9/923	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5

Invented Spelling
1 - Little invented spelling
2 - Attempts at invtd words
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Read Back
1 - Cannot read own writing
2 - Can read back part of text
3 - S & adult can read back most of text
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Originality
1 - Copies sample words
2 - Finishes starter w/ 1-2 orig words
3 - Finishes story starter w/ several thoughts
4 - Inconsistent use of story starter
5 - All text uses original thoughts

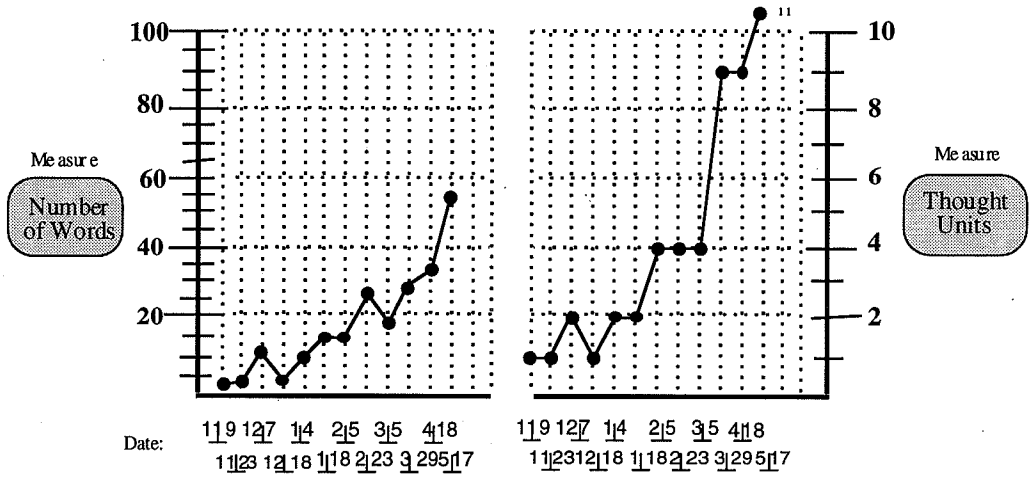
Syntax
1 - Writes random words
2 - Sentence fragments
3 - Sentences w/out articles
4 - Sentences w/ articles Some punctuation
5 - Complete sentences w/ articles Some caps & ending marks

Recommendations Provide story starter every day; Help to hear sounds.

Figure 12. Rose's Progress Toward Expressive Writing

Rose, on the other hand, had increased both the number of thought units and total words in her writing samples. Her invented spelling got off to a very slow start because she was easily discouraged and did only the minimal work required. Once she caught on to writing down original ideas, she was

motivated to use her knowledge of phonics for spelling and reading back her journal. She was beginning to take notice of syntax and grammar.



Date	Invent Spell	Read Back	Originality	Syntax
5/17/93	1 2 3 4 (5)	1 2 3 4 (5)	1 2 3 4 (5)	1 2 3 (4) 5
4/18/93	1 2 3 4 (5)	1 2 3 4 (5)	1 2 3 4 (5)	1 2 3 (4) 5
3/29/93	1 2 3 4 (5)	1 2 3 4 (5)	1 2 3 4 (5)	1 2 3 (4) 5
3/5/93	1 2 3 4 (5)	1 2 3 (4) 5	1 2 3 4 (5)	1 2 3 (4) 5
2/23/93	1 2 3 4 (5)	1 2 3 (4) 5	1 2 3 4 (5)	1 2 3 (4) 5
2/5/93	1 2 3 4 (5)	1 2 3 4 (5)	1 2 3 4 (5)	1 2 3 4 (5)
1/18/93	1 2 3 (4) 5	1 2 3 (4) 5	1 2 3 4 (5)	1 2 3 (4) 5
1/4/93	1 2 3 (4) 5	1 2 3 (4) 5	1 2 3 4 (5)	1 2 3 (4) 5
12/18/92	1 2 (3) 4 5	1 2 3 (4) 5	1 2 3 (4) 5	1 2 (3) 4 5
12/7/92	1 2 (3) 4 5	1 2 (3) 4 5	1 2 3 4 (5)	1 2 (3) 4 5
11/23/92	1 (2) 3 4 5	1 2 (3) 4 5	1 2 3 (4) 5	1 2 (3) 4 5
11/9/923	(1) 2 3 4 5	1 (2) 3 4 5	1 (2) 3 4 5	1 (2) 3 4 5

Invented Spelling
1 - Little invented spelling
2 - Attempts at invtd words
3 - Invtd words use correct beginning sound
4 - Invtd words use vowels
5 - Invtd words make phoentic sense

Read Back
1 - Cannot read own writing
2 - Can read back part of text
3 - S & adult can read back most of text
4 - S & adult can read all text
5 - S & adult can read all text at later time

Originality
1 - Copies sample words
2 - Finishes starter w/ 1-2 orig words
3 - Finishes story starter w/ several thoughts
4 - Inconsistent use of story starter
5 - All text uses original thoughts

Syntax
1 - Writes random words
2 - Sentence fragments
3 - Sentences w/out articles
4 - Sentences w/ articles Some punctuation
5 - Complete sentences w/ articles Some caps & ending marks

Recommendations Encourage longer journals - she's capable

Figure 13. Marge's Progress Toward Expressive Writing

Marge had made steady progress throughout the year, perhaps noted primarily in the "originality" of her performance. Her journal entries were much longer and better developed. She also was starting to notice syntax and grammar.

Since writing ability is so closely tied to reading ability in its beginning stages (using phonics to decode words, noticing sentence elements of capitalization and punctuation, sensing the author's purpose, etc.), it may be noted that all of the children made progress in making their original writing understandable. As more reading strategies were introduced, writing improved.

Monitoring Reading Lab for Non-Writers

This case study was developed to monitor the progress in written retell of a 10th grader. Samples of the student's retells were taken and progress was charted on the basis of total number of words written and number of thought units.

Student Demographic

The student in this study, Mary, has reading skills between the 2.0 and 3.0 grade level, according to the Woodcock-Johnson R assessment scale. Mary is hearing impaired and was orthopedically impaired as an infant and young child. She is the youngest of ten children and was not sent to school until she was of 6th grade age, so she is constantly playing "catch up."

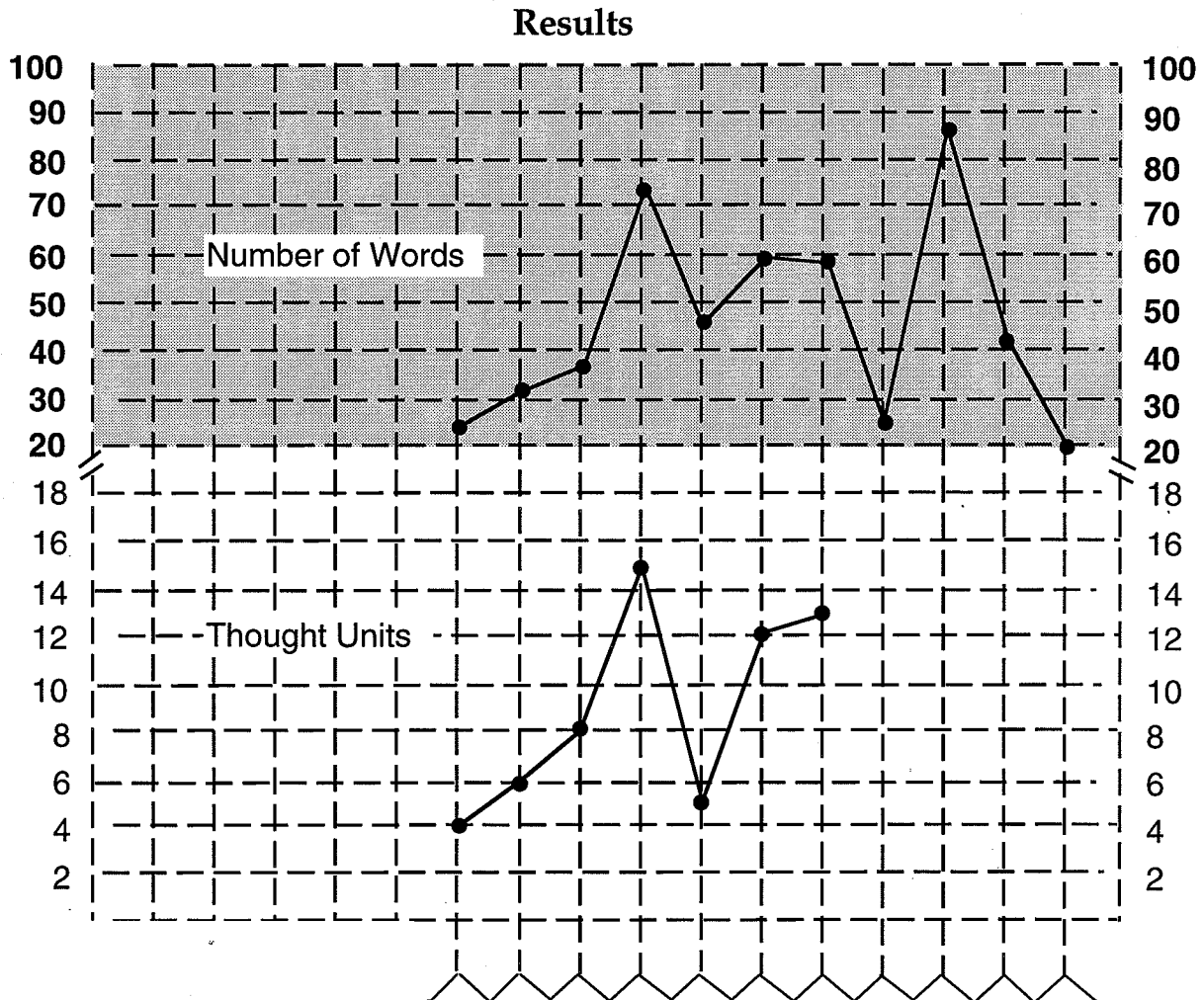
At the introduction of the study, Mary could not consistently write a complete sentence. She often labored for 20 minutes to produce one short sentence or phrase and she would ask how to spell nearly every word. She had mastered a profound list of excuses to get out of doing any reading or writing assignments; i.e., bathroom privilege, sharpen a pencil, crunching paper to throw away, being excused to make phone calls to parents, check with counselor, going to the sick room, etc...

Program Description

Each student began reading from the "Caught for the (Third) Time" reading series. After completing the third and fourth book, students occasionally digressed from this series to a high interest, low reading level novel to comply with regular education reading class book reports. The students were responsible for written work daily, which they dated and handed in. The teacher selected 2-3 samples per month to chart the number of thoughts written and the number of words written.

Progress Monitoring System

Each student was given the direction: "You will read orally for 20 minutes; close the book, then write what you read for 15 minutes." Each student read privately with an adult listening and assisting. Upon completion of the assignment, each student could conceivably earn up to 15 minutes of free time within the classroom. Students were aslo asked to retell a movie or TV program which they enjoyed. They were then told that writing is like speaking—you tell it to your pencil in your mind (quietly). Then they would try to write one sentence about the story they told orally. Each was capable of communicating verbally, therefore, it was initially assumed that a student could communicate in writing, given practice and time. In this instance, each rose to the expectation.



date	2/23	2/24	3/15	3/16	3/25	4/1	4/20	4/26	5/14	5/19	6/2
no. of words	24	31	38	75	46	60	59	24	88	41	20
thought units	4	6	8	15	5	12	13				

Figure 14. Mary's Progress in Written Retell

Mary showed improvement in her reading and writing ability, and subsequently, written comprehension and retell. She has a more positive outlook on reading and writing and often choses to read during "free time." Mary now completes written work in her other classes. Other teachers have commented on the improvement Mary has shown.

A Case Study in Journal Writing

This case study in progress monitoring centered on the writings of three students, all with some form of academic disability. Students wrote in their journals and made illustrations to match, which were then scored on both quantitative and qualitative scales.

Student Demographic

Maggie was a 10 year-old student who came into the program from a severe/moderately disabled classroom within the district. She was low-functioning (estimated IQ of 50) with moderate disabilities. Maggie had meningitis as a toddler resulting in both mental and physical disabilities. Her left side was primarily affected, and she wore a leg brace and had minimal use of her arm and hand. She came into the program with pre-school skills in all areas. Her expressive and receptive language was low, which led to incomplete thoughts in her writing. She was a friendly child who loved to learn, but tended to be off-task in group work. Maggie required assistance to complete most writing tasks, although she was beginning to use invented spelling and to write down words and sometimes simple thoughts without assistance.

Harry was a nine year-old student who had borderline moderate to mild disabiltites. He had been in a self-contained program for all his school years. He lived with his mother and an older brother who was in the gifted program. Harry's skills were kindergarten to beginning first grade in all areas. Harry's writing skills were as follows: He could form all letters, copy words and sentences, and spell a few words. Writing required partial assistance.

Billy was a nine-year-old student from another self-contained program within the district. He was a higher functioning, student with mild disabiltites and strong reasoning and verbal skills. He lived with his mother and a younger sister. He was a pleasure to have in the classroom and a model student. Billy was referred for articulation problems which had a direct effect on his invented spelling progress in writing. He also had poor small motor skills, so his writing was sometimes unreadable. Billy could write independently but still needed work on writing down complete thoughts.

Hogan, a nine year-old student was another higher functioning, mildly disabled student who had strong reasoning and verbal skills. Hogan's parents were divorced and he lived with his mother and two older brothers. All siblings were in self-contained programs. Hogan was on medication for hyperactivity and could not function without it. Inconsistent medication had been a major problem with Hogan's academic performance. Lack of counseling for past problems also had hindered Hogan's learning. He could write independently and was a very creative writer; however spelling was the biggest area of concern in his writing.

Program Description

Journal writing was monitored to determine progress for these students. Four days a week, first thing in the morning, the students wrote in their journals. They were allotted 10 to 15 minutes to complete an entry, along with a picture to accompany the writing sample. Students were allowed to work in their journals during free time, but it was handed in before lunch. The journals were edited only to make sense. An open line of written communication was completed almost daily to the journal writer from the reader. Invented spelling was encouraged and taught. The goal was to write down original thoughts and practice the writing process in an informal setting. Communication through written language was the ultimate goal. The materials used were monthly booklets with seasonal pictures and paper with lines and a place for pictures.

Skills ranged from complete assistance from the teacher or aide, to copying words and simple phrases with or without assistance, to totally non-assisted entries of single sentences to several thought units.

Progress Monitoring System

The progress monitoring system combined quantitative measurements of thought units and number of words in an entry, as well as qualitative judgments for invented spelling, originality, and syntax. Progress was monitored weekly and data were recorded monthly on a graph.

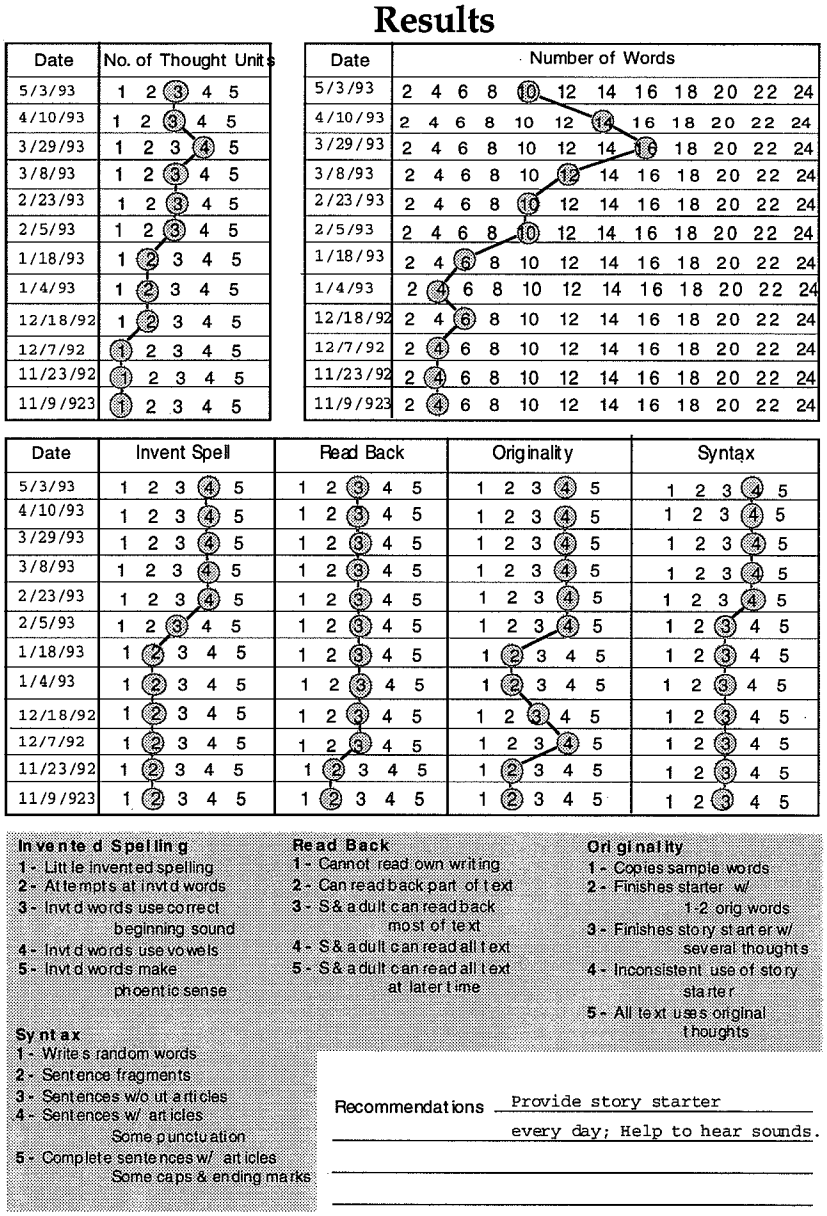
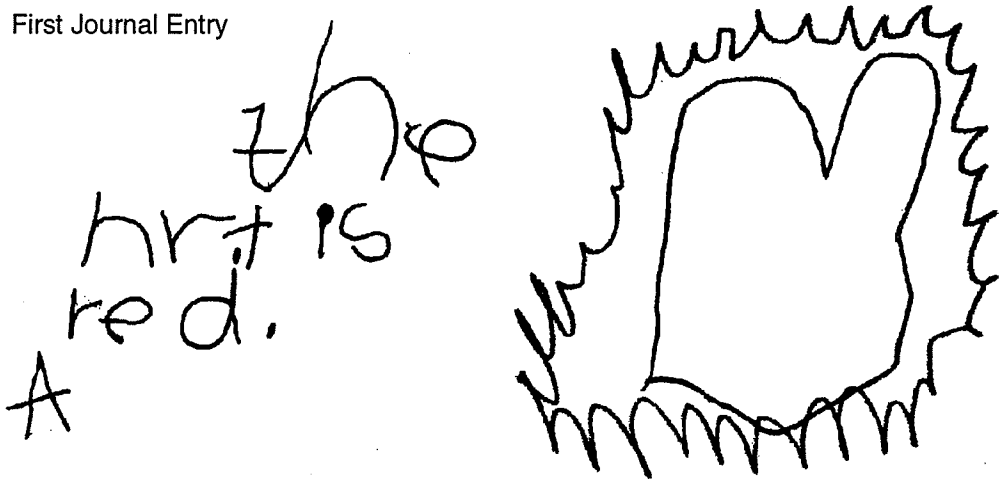


Figure 15. Maggie's Progress Toward Journal Writing Goals

Maggie's Journal Samples

First Journal Entry



Last Journal Entry

Figure 16. First and Last Journal Samples for Maggie

Maggie increased her thought units minimally, but made strong progress in the number of words written. She learned letter sounds and was applying them in her attempts at invented spelling. She continued to need assistance to write down thoughts, but compared to the phases of the program, she showed considerable progress. Before the program began, the journal was practically written by the aide then copied by Maggie. Following the program, she was able to write one or two complete thoughts with limited assistance. As her expressive language developed, Maggie's syntax also improved. Maggie's illustrations went from immature drawings to simple completed pictures.

Date	Thought Units
5/26/93	1 2 3 4 5
5/20/93	1 2 3 4 5
5/17/93	1 2 3 4 5
4/29/93	1 2 3 4 5
4/19/93	1 2 3 4 5
4/13/93	1 2 3 4 5
3/18/93	1 2 3 4 5
3/11/93	1 2 3 4 5
2/25/93	1 2 3 4 5
2/16/93	1 2 3 4 5
2/4/93	1 2 3 4 5
1/28/93	1 2 3 4 5
1/13/93	1 2 3 4 5
1/4/93	1 2 3 4 5
12/16/92	1 2 3 4 5
12/2/92	1 2 3 4 5
11/25/92	1 2 3 4 5
11/3/92	1 2 3 4 5

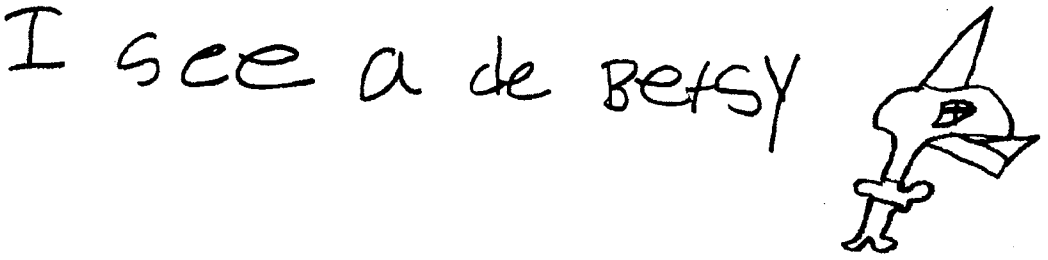
Date	Number of Words
5/26/93	2 4 6 8 10 12 14 16 18 20 22 24
5/20/93	2 4 6 8 10 12 14 16 18 20 22 24
5/17/93	2 4 6 8 10 12 14 16 18 20 22 24
4/29/93	2 4 6 8 10 12 14 16 18 20 22 24
4/19/93	2 4 6 8 10 12 14 16 18 20 22 24
4/13/93	2 4 6 8 10 12 14 16 18 20 22 24
3/18/93	2 4 6 8 10 12 14 16 18 20 22 24
3/11/93	2 4 6 8 10 12 14 16 18 20 22 24
2/25/93	2 4 6 8 10 12 14 16 18 20 22 24
2/16/93	2 4 6 8 10 12 14 16 18 20 22 24
2/4/93	2 4 6 8 10 12 14 16 18 20 22 24
1/28/93	2 4 6 8 10 12 14 16 18 20 22 24
1/13/93	2 4 6 8 10 12 14 16 18 20 22 24
1/4/93	2 4 6 8 10 12 14 16 18 20 22 24
12/16/92	2 4 6 8 10 12 14 16 18 20 22 24
12/2/92	2 4 6 8 10 12 14 16 18 20 22 24
11/25/92	2 4 6 8 10 12 14 16 18 20 22 24
11/3/92	2 4 6 8 10 12 14 16 18 20 22 24

Date	Invent Spell	Read Back	Originality	Syntax
5/26/93	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
5/20/93	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
5/17/93	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
4/29/93	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
4/19/93	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
4/13/93	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
3/18/93	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
3/11/93	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
2/25/93	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
2/16/93	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
2/4/93	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
1/28/93	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
1/13/93	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
1/4/93	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
12/16/92	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
12/2/92	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
11/25/92	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
11/3/92	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5

Figure 17. Harry's Progress Toward Journal Writing Goals

Harry's Journal Samples

First Journal Entry



Last Journal Entry

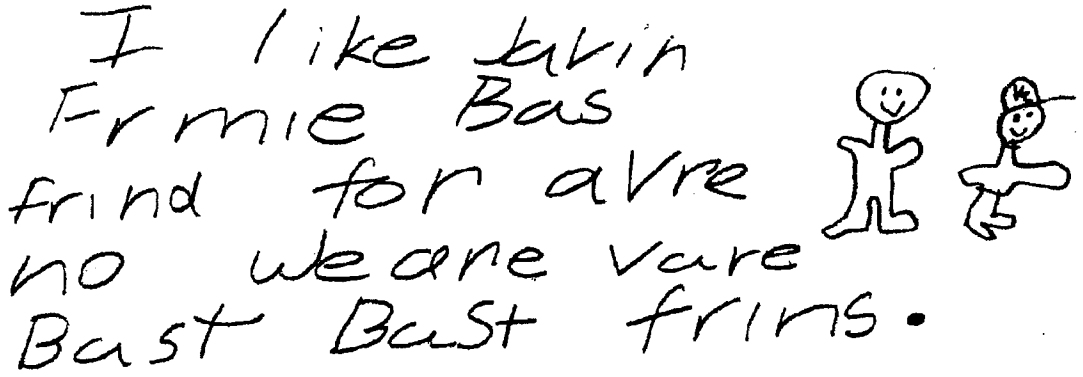


Figure 18. First and Last Journal Samples for Harry

Harry made progress in both the quantity of thought units and the number of words written. Journal stories were longer and more ideas were expressed. He went from totally assisted to minimally assisted writing. Harry also wrote complete thoughts instead of fragments.

Date	Thought Units
5/26/93	1 2 3 4 5
5/20/93	1 2 3 4 5
5/17/93	1 2 3 4 5
4/29/93	1 2 3 4 5
4/19/93	1 2 3 4 5
4/13/93	1 2 3 4 5
3/18/93	1 2 3 4 5
3/11/93	1 2 3 4 5
2/25/93	1 2 3 4 5
2/16/93	1 2 3 4 5
2/4/93	1 2 3 4 5
1/28/93	1 2 3 4 5
1/13/93	1 2 3 4 5
1/4/93	1 2 3 4 5
12/16/92	1 2 3 4 5
12/2/92	1 2 3 4 5
11/25/92	1 2 3 4 5
11/3/92	1 2 3 4 5

Date	Number of Words
5/26/93	2 4 6 8 10 12 14 16 18 20 22 24 35
5/20/93	2 4 6 8 10 12 14 16 18 20 22 24 41
5/17/93	2 4 6 8 10 12 14 16 18 20 22 24 34
4/29/93	2 4 6 8 10 12 14 16 18 20 22 24 30
4/19/93	2 4 6 8 10 12 14 16 18 20 22 24
4/13/93	2 4 6 8 10 12 14 16 18 20 22 24
3/18/93	2 4 6 8 10 12 14 16 18 20 22 24
3/11/93	2 4 6 8 10 12 14 16 18 20 22 24
2/25/93	2 4 6 8 10 12 14 16 18 20 22 24
2/16/93	2 4 6 8 10 12 14 16 18 20 22 24
2/4/93	2 4 6 8 10 12 14 16 18 20 22 24
1/28/93	2 4 6 8 10 12 14 16 18 20 22 24
1/13/93	2 4 6 8 10 12 14 16 18 20 22 24
1/4/93	2 4 6 8 10 12 14 16 18 20 22 24
12/16/92	2 4 6 8 10 12 14 16 18 20 22 24
12/2/92	2 4 6 8 10 12 14 16 18 20 22 24
11/25/92	2 4 6 8 10 12 14 16 18 20 22 24
11/3/92	2 4 6 8 10 12 14 16 18 20 22 24

Date	Invent Spell	Read Back	Originality	Syntax
5/26/93	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
5/20/93	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
5/17/93	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
4/29/93	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
4/19/93	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
4/13/93	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
3/18/93	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
3/11/93	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
2/25/93	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
2/16/93	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
2/4/93	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
1/28/93	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
1/13/93	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
1/4/93	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
12/16/92	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
12/2/92	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
11/25/92	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
11/3/92	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5

Figure 19. Billy's Progress Toward Journal Writing Goals

Billy made the most improvement in the study. He began with no written language ability except for knowledge of letter sounds and at the conclusion of the program, was writing complete thoughts and stories unassisted. As his reading fluency increased, his spelling became more accurate which cued his attention to syntax and grammar, when reading back the entry. Motivation improved both handwriting and illustrating.

Date	Thought Units
5/30/93	1 2 3 4 5
5/19/93	1 2 3 4 5
5/16/93	1 2 3 4 5
4/30/93	1 2 3 4 5
4/27/93	1 2 3 4 5
4/11/93	1 2 3 4 5
3/22/93	1 2 3 4 5
3/15/93	1 2 3 4 5
2/25/93	1 2 3 4 5
2/18/93	1 2 3 4 5
2/1/93	1 2 3 4 5
1/29/93	1 2 3 4 5
1/25/93	1 2 3 4 5
1/4/93	1 2 3 4 5
12/12/92	1 2 3 4 5
12/2/92	1 2 3 4 5
11/24/92	1 2 3 4 5
11/2/92	1 2 3 4 5

Date	Number of Words
5/30/93	2 4 6 8 10 12 14 16 18 20 22 24
5/19/93	2 4 6 8 10 12 14 16 18 20 22 24
5/16/93	2 4 6 8 10 12 14 16 18 20 22 24
4/30/93	2 4 6 8 10 12 14 16 18 20 22 24 32
4/27/93	2 4 6 8 10 12 14 16 18 20 22 24
4/11/93	2 4 6 8 10 12 14 16 18 20 22 24
3/22/93	2 4 6 8 10 12 14 16 18 20 22 24
3/15/93	2 4 6 8 10 12 14 16 18 20 22 24
2/25/93	2 4 6 8 10 12 14 16 18 20 22 24
2/18/93	2 4 6 8 10 12 14 16 18 20 22 24
2/1/93	2 4 6 8 10 12 14 16 18 20 22 24
1/29/93	2 4 6 8 10 12 14 16 18 20 22 24
1/25/93	2 4 6 8 10 12 14 16 18 20 22 24
1/4/93	2 4 6 8 10 12 14 16 18 20 22 24
12/12/92	2 4 6 8 10 12 14 16 18 20 22 24
12/2/92	2 4 6 8 10 12 14 16 18 20 22 24
11/24/92	2 4 6 8 10 12 14 16 18 20 22 24
11/2/92	2 4 6 8 10 12 14 16 18 20 22 24

Date	Invent Spell	Read Back	Originality	Syntax
5/30/93	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
5/19/93	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
5/16/93	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
4/30/93	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
4/27/93	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
4/11/93	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
3/22/93	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
3/15/93	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
2/25/93	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
2/18/93	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
2/1/93	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
1/29/93	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
1/25/93	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
1/4/93	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
12/12/92	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
12/2/92	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
11/24/92	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
11/2/92	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5

Figure 20. Hogan's Progress Toward Journal Writing Goals

Although Hogan made steady progress during this study, inconsistent medication and a lack of counseling reduced his academic growth. As Hogan's reading fluency increased, so did his invented spelling and syntax. Motivation was lacking to write longer stories.

Progress Monitoring in a Recreation Program

The goal of this study in progress monitoring was to get a student with multiple disabilities to function in a recreational setting independently for 20 minutes.

Student Demographic

Lewis was a 13 year-old, multi-handicapped middle school student with severe retardation, cortical visual impairment and partial paralysis of the right side of the body. He could not independently move himself from one place to another but used a wheelchair. He was placed in an apparatus several times a day which allowed Lewis to stand. His official functioning age was five months; he needed assistance in all activities and did almost no initiating of any activities. He often reached for objects and people that came in contact with him.

Lewis was the oldest of four children who ranged in age from 5 to 13 years. The family went on a lot of outings, and Lewis participated totally in all family activities. At school he spent most of his time in the self-contained special education classroom for students with moderate to severe disabilities. With an assistant, he regularly joined regular education kids for physical education, music, library, recess, and lunch.

Program Description

Lewis's program was implemented by the special education teacher and the instructional assistant. His goals encompassed social, behavioral and self-help skills, as well as recreation activities. He received physical therapy from an occupational/physical therapist and communication consultation from a communication disorders specialist. Each of the specialists wrote their own program with consultation from the teacher, but little consultation with each other. Because Lewis's conceptual level was pre-symbolic, he used a "concrete calendar" for scheduling and prediction (e.g., "what comes next?"). The calendar, a collection of items used in association with activities, included the following objects: a ball for physical education; a book for the library; a spoon for lunch; a Tupperware container for snack; a piece of fabric for his stander; a strap for his positioning wedge; a coin purse for field trips; a tape for his cassette player switch; a comb for grooming; a mallet for music; a piano key for playing the piano; and a piece of rug for his physical therapy program. During the day, Lewis partially participated in the following activities:

- putting away his lunch; working in a communication notebook;
- playing an electronic piano keyboard;
- getting in and out of his wheelchair;

- feeding himself lunch and a snack;
- using the toilet;
- playing the radio;
- using a blender to prepare snacks;
- combing his hair, washing his hands and face;
- looking at tactile books;
- playing games in physical education;
- swinging;
- and greeting people.

Most of Lewis's activities contained a great deal of external manipulation, in which he was physically moved through the activities the staff wanted him to do. As he began to have some independent implementation of the routine, the physical manipulation was reduced to a redirection or a touch cue.

Progress Monitoring

Lewis's primary goals focused on developing some independent recreation skills. Lewis was working on piano playing, using a switch to turn on a radio, and using headphones to listen to stories or music. These activities all involved aspects of independently interacting with music (with various degrees of initiating) and were monitored with a consistent set of scoring strategies and teacher prompts. The program being monitored for this case was the headphone program. The goal of the program was for Lewis to leave his headphones on for 20 minutes while listening to music or a story on tape, which did not require any initiating.

In the self-contained classroom, Lewis was placed in his standing frame. The music was started, then the headphones were put on his head. An adult sat beside the stander and if Lewis raised his hand toward the headphones, the adult put Lewis's hand down on the tray saying, "hand down." If he raised his shoulder or lowered his head in an attempt to remove the headphones, the adult raised Lewis's head saying, "head up."

At the beginning of the year, data were taken by counting the number of minutes Lewis listened without attempting to remove the headphones. When he made an attempt to remove them, the clock was stopped and the number of minutes recorded. In March, the method of data collection was changed from measuring time to percent of listening time, based on a momentary time sample taken on the minute for 20 minutes. If Lewis was listening to the music without trying to remove the headphones, he received a data check. If he needed help to keep the headphones on, he did not get a check. Percentage was figured by dividing the number of data points in half and multiplying by ten. The results of his progress are graphed on the following page.

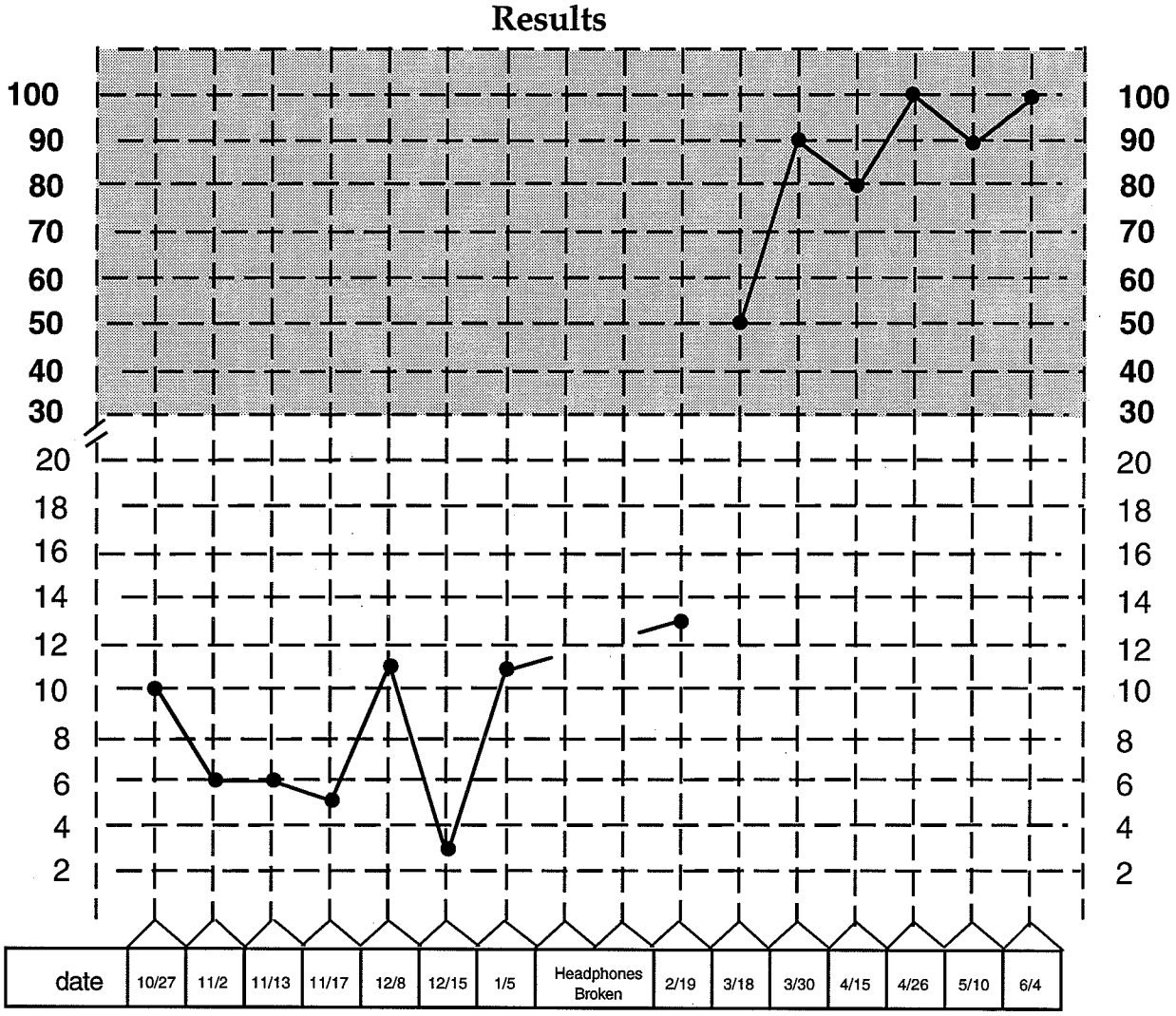


Figure 21. Lewis's Progress Toward Independent Functioning in Recreation

At the beginning of the study, Lewis would only listen independently if his Jerry Lee Lewis tape was on. In the end, he would listen to other music and also dramatized stories. Progress in both total number of minutes and percentage of minutes of independent listening was made. Lewis's cooperation level also rose throughout the study, allowing for easier progress monitoring.

Monitoring Progress Towards Independent Grocery Shopping

Most students who are in a life skills program will probably always be in an assisted living/work situation, but students who can learn to travel independently and to plan, purchase and prepare meals, have a better chance of living more independently than others with the same disabilities. Independent grocery shopping, while a simple task for many, is an important goal to obtain for Winston, the student in this study. Through the use of picture cards, video tapes, and hands-on shopping skills, Winston was able to learn this valuable skill.

Student Demographic

Winston was a 12 year-old life skills student with mild mental retardation and attention disorder with hyperactivity disorder (ADHD). He was a sixth grader who took medication for his disabilities. He began sixth grade in a basic skills class at his home middle school; however this placement was extremely frustrating for Winston. He could not get from one room to the next on time, could not do the work expected of him, and he was always in trouble. Winston's Woodcock Johnson grade equivalent scores in May 1992, were as follows: Reading, 6-5; Written Language, 5-11; Math, 6-1; General Knowledge, 5-5. At the time this study was implemented, Winston's scores had been relatively unchanged for several years

In November, Winston was moved to a life skills class at another middle school. He was immediately accepted, as he was reunited with many of his former classmates from elementary school. Even with his medication for ADHD, Winston was generally very cheerful and willing to work. At times, he showed signs of anger with other students, but did not get physical with the teacher present. However, another life skills teacher in the building, as well as Winston's mother had reported episodes of physical displays of anger.

Program Description

The goal for Winston was to grocery shop alone and find needed items. The curriculum used to teach these skills was *Shopping Smart* (published by *Attainment Corporation).* The program, which includes two video tapes and picture cards, portrays a real-life situation in which Mary goes shopping for dinner guests. Mary puts the picture cards in a special book to make up her shopping list, then uses her book in the store to do her shopping. Winston was given a similar book. The *Shopping Smart* curriculum was reviewed with all the students about once a month.

Progress Monitoring System

For Winston's shopping, the teacher chose five picture cards of foods from each of the basic food groups. Winston was asked to find the same items on each trip to the store: One banana, a box of macaroni and cheese, a package of English muffins, a jar of peanut butter, and one quart of milk. Winston was taken grocery shopping once a week with his picture book. The teacher brought a timer, clipboard, and pencil to record data. Once at the store, Winston would get a cart and place his picture book in the child seat, which had been his own idea. Prompts, including modeling and verbal and physical assistance, were occasionally required as motivators. Winston began shopping at *Albertson's* store, but was switched to *Safeway* to facilitate the use of district purchase orders.

Results

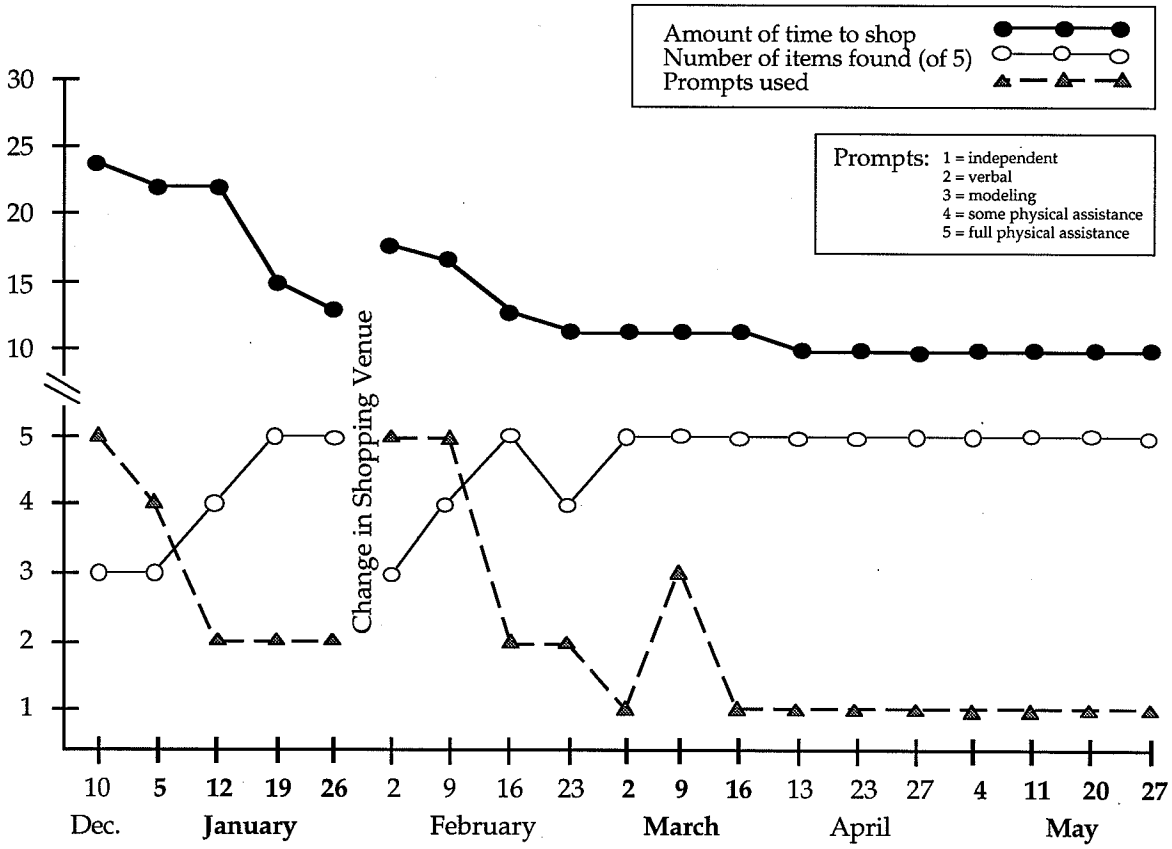


Figure 22. Winston's Progress in Various Aspects of Grocery Shopping

During the first 11 shopping trips, Winston pushed his cart randomly down all, or most of the aisles, to find the food items in his picture book. On his twelfth trip, without teacher suggestion, Winston started at the far-end of the store and began retrieving the items. Winston was able to find all items from his picture book without back tracking down the aisles.

On the next shopping trip, Winston was shown how to match the words on the card with the store directory to find the correct aisle, then match the aisle number with the food items listed on the individual aisle signs. The teacher also suggested that Winston rearrange the picture cards in his book into the order he wants to pick them up at the store.

Winston's progress with the initial five items was definite. Although downward trends in each measure are apparent after the change in grocery stores, this was expected by the teacher. Winston was required to relearn the patterns that he had developed after the move. After becoming accustomed to the new venue, the amount of time taken to find each of the items decreased dramatically, as did the number of prompts required to motivate and pace Winston. At the end of the monitoring period, Winston was efficient in the time taken to find all five food items, with little or no teacher influence. Winston mastered the task so well, the teacher noted room for growth and suggested a need to vary the quantity of the food items, the items themselves, and grocery store to transfer the learning from one situation to another. These changes should insure that the student is learning, as opposed to memorizing.

Measured Progress on Sight Words

This case study describes a student's progress through letter recognition and sight word recognition. Larry was a second grader just beginning to read. This case study measured his progress on sight words throughout the school year.

Student Demographic

Larry was eight years old, and eligible for special education because he was diagnosed mild mental retardation. Larry had no medical problems that had to be dealt with at school. He acted much younger than a second grader, and could act aggressively while interacting and playing with peers. Larry's mother also was involved with special education while she was in school and had a live-in boyfriend who was quite aggressive with Larry.

Larry came to the resource room for 90 minutes a day for specific work in reading and language arts. The rest of his day was spent in a regular second grade classroom. There was an instructional assistant who was available to help him as needed. Larry was able to do math with the assistant in the second grade class. Larry's instructional program was delivered by assistants who work closely with the teacher in overseeing Larry's educational program. The second grade teacher and special education teacher modified Larry's program as needed.

Program Description

Larry's progress was measured three to four times a week. After initial measures in alphabet recognition and letter sounds, the 250 most common words from the *Brigance Basic Inventory of Skills* were used as the domain for sampling measurement items. Larry was given daily two minute timings using flash cards. As his skill level increased, Larry was taught new sight words using a kinesthetic approach (i.e. using shaving cream, making words in clay, finding words on a magazine page, and practicing using words in sentences). Larry was encouraged to keep a chart of his progress as a motivational strategy. It was very motivational for Larry to chart his own progress and to earn stickers for his work.

Larry made great progress with the sounds of letters and was eventually moved onto sight words. He was given the first 72 words of the basic sight words from *Brigance Inventory of Skills.* He was asked to read aloud as many words as he could in a two minute time period; some of the words were familiar while others where new. Each day an instructional assistant would shuffle sight word cards and present them to Larry for two minutes. The assistant would tell Larry which words he had missed.

Results

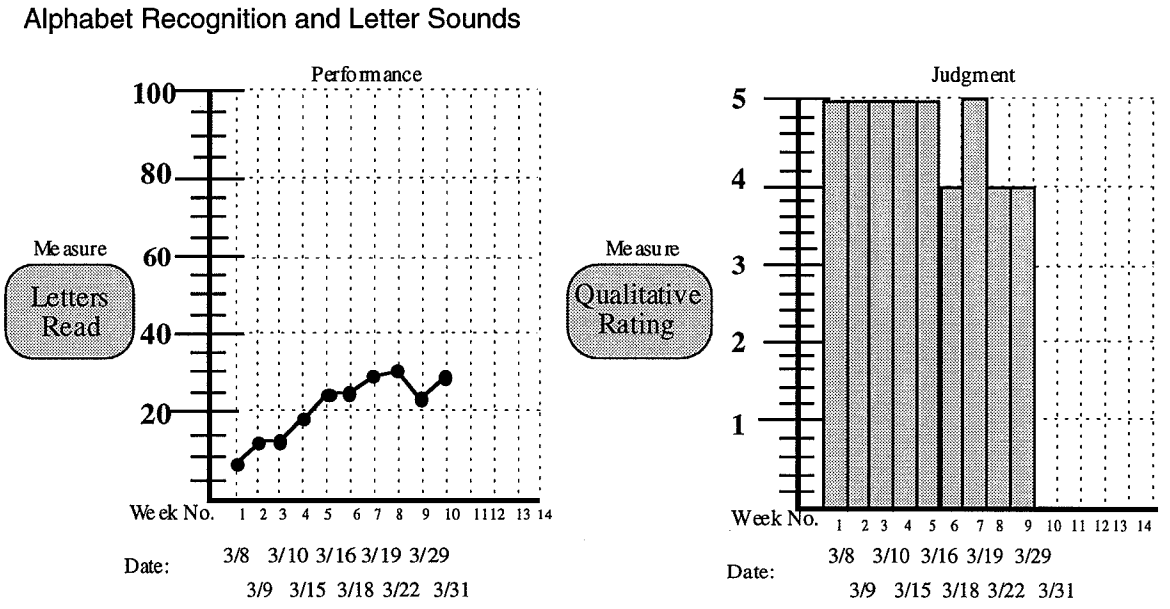


Figure 23. Larry's Progress Toward Alphabet Recognition

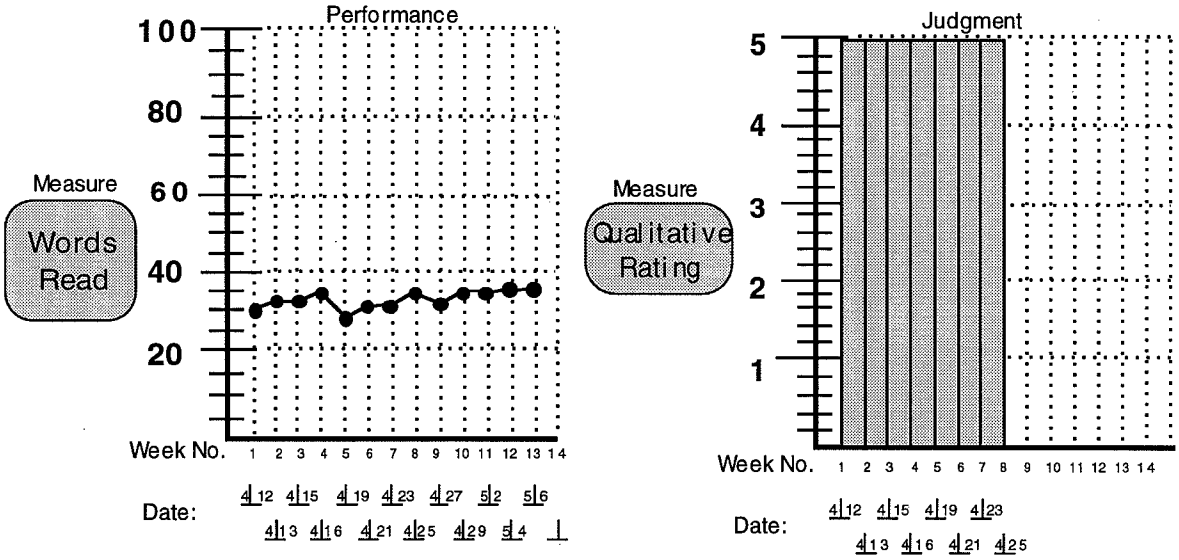


Figure 24. Graphic Reports of Larry's Sight Word Progress (April-May)

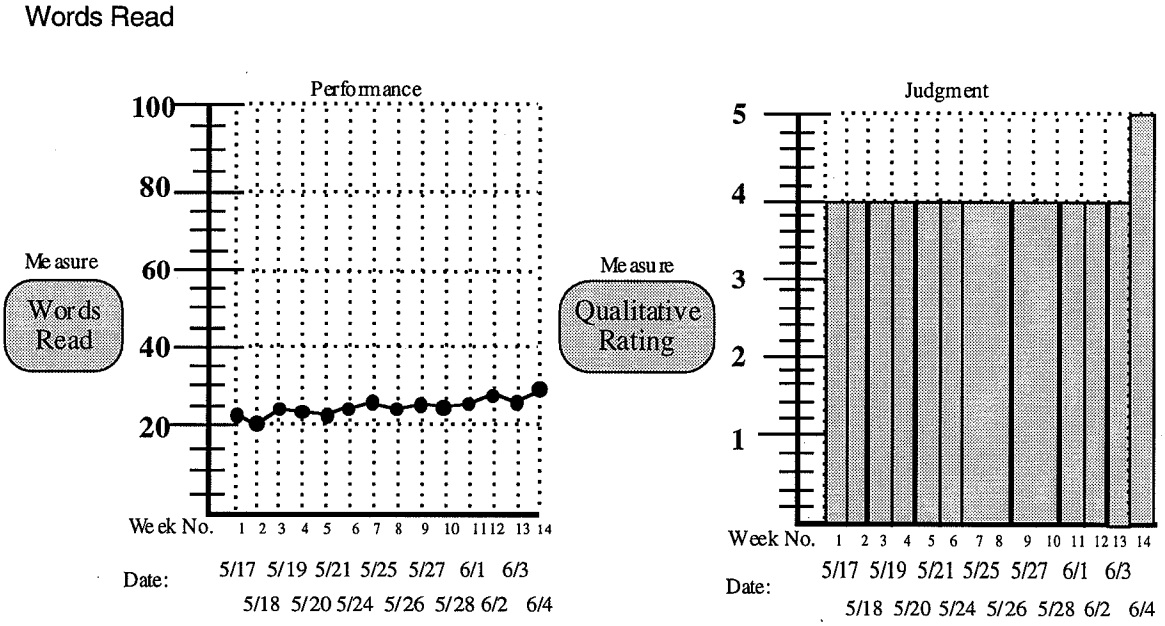


Figure 25. Graphic Reports of Larry's Sight Word Progress (May-June)

Larry started with alphabet letter/sound identification and mastered the majority of sounds by January. This phase acted as a preparatory period for sight word recognition and monitoring, of which the progress is graphed above. When Larry was first asked to read sight words he struggled, only reading 2 or 3 out of 11 sight words in a two minute period. By the end of February, however, he was able to say all eleven. Since Larry was already in a pre-learning state, the teacher decided to increase the number of sight words to 72 and monitor progress. Larry reacted positively to the increase and peaked at 37 words in a two minute period.

The teacher also started teaching sight words to students with learning disabilities. First they were given the *Brigance* sight word section of the test to find their level. Then, a large group of words was selected (some already known by student; some totally new or in pre-learning state) from which to instruct the students. The process worked well, with the students' fluency increasing quickly.

Progress Monitoring in Functional Skills

This case study focuses on Raymond, a fourth grade student who had previously made very little academic progress. Though Raymond was quite socially appropriate with good verbal skills, his reading and writing skills were very minimal. He generally was able to understand and follow school and classroom rules. One goal for this student was to write basic information about himself that he might need on a daily basis such as name, current date, address, phone number and birth date.

Student Demographic

Raymond was labeled as having mild mental retardation. He was the oldest of three children, and his mother had been in and out of a mental institution. She was not allowed to come back to the home between institution visits, so she had an apartment in a nearby town. The children saw her on a monthly basis. As a result, the father quit his job to be a full-time parent.

At the beginning of the program Raymond was given the *Wide Range Achievement Test*. He scored at the Pre-first level in Reading and Spelling and first grade in Math. His Life Skills Assessment score indicated that Raymond needed additional support to learn a wide range of skills to help him function in everyday life.

Raymond was in a Special Education Life Skills/Pre-Vocational Program, with the academic portion of Raymond's program within the Life Skill's classroom. He went to lunch, physical education, music, library, and assemblies with a fourth grade Basic Education class. His gross motor skills were being monitored by the physical therapist through observation and consultation with the regular education teacher. Raymond's verbal skills were much stronger than his writing skills. Recalling how letters and numbers look, without copying them and being able to actually write them, was very difficult for him.

Program Description

Within the Life Skills component, Raymond was working on a program to write his first and last name, address—including street number and name, city, state, zip code—phone number, and birth date.

Progress Monitoring System

Given a blank form, Raymond filled in the missing information four times weekly, by copying from an original provided. It took him 20–30 minutes daily to copy this information. On the fifth day, he was instructed to fill in the form from memory. He was measured by counting each character correctly formed.

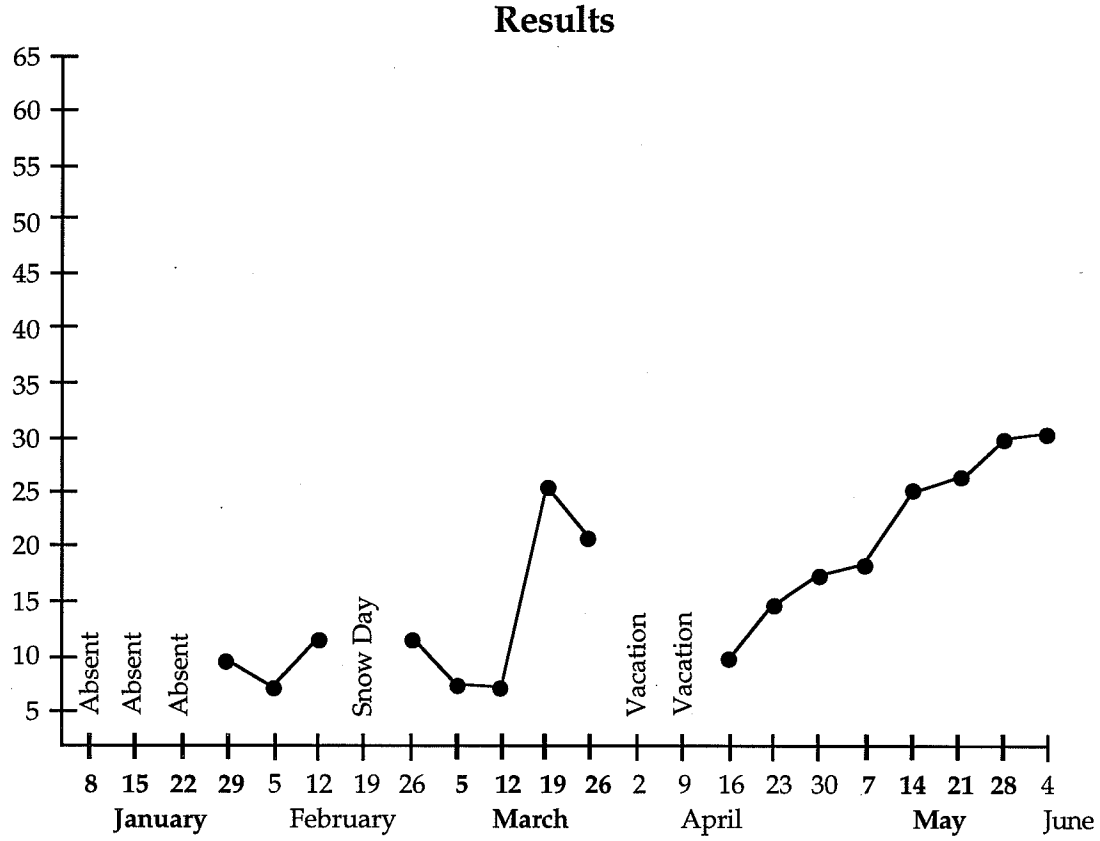


Figure 26. Raymond's Progress in Functional Skills

Although Raymond did not progress as rapidly as other students who performed this activity, progress was evident. Raymond also developed a sense of pride in his work, which was viewed as a successful side effect.

Monitoring Community Independence

This case study was developed to monitor the progress of 15 year old student with Down's Syndrome in community interaction. The student was taught to ride the public transit system, use a pay phone, order from a restaurant menu, pay for purchases, clear his eating area, and participate in a community recycling program.

Student Demographic

Sam, the student in this study, is nearing the age of transition from school to community. He has been protected by his family and previous teachers and has been treated much like a 5-6 year old. The teacher decided it was time to train Sam for acting independently and responsibly the community. He was taken into the community a minimum of three times a week and expected to perform several tasks related to unassisted living.

Program Description

Sam spends the majority of his instructional time working on skills to become more independent within his community. He is a member of the recycling crew that makes weekly stops among community businesses, picking up cardboard that is taken to the recycling center. This is a student-based operation and they do all of the loading and unloading. Sam is included each week and given an assigned job that he has to perform that is vital to completing the day's work. The students' lunch break is taken at various local establishments where Sam practices ordering and paying for lunch, as well as clearing his lunch area.

Two times a week Sam traveled with his job trainer 20 miles to and from his work site on the city transit. Sam's job was to arrange shelves and clean them at a local grocery store. He was provided close supervision, as he often had difficulty staying on task for more than 15 minutes. Each work day, Sam placed a call on the pay phone, either to his mother, grandmother or teacher.

Progress Monitoring System

Criterion were established to monitor Sam's progress (See Figure 27). The number corresponding to the degree of prompt was recorded and graphed. Data was gathered based on weekly evaluations of task completion.

Qualitative Criteria

5
STUDENT INDEPENDENCE
Student performed task independently

4
REDIRECTION
Student initiates correct action but instructor must intercede to redirect

3
NON-VERBAL CUE
Using gestures, pointing, nods, etc.

2
VERBAL PROMPT
No physical touching; verbal encouragement only

1
PHYSICAL ASSISTANCE AND VERBAL DIRECTIONS
Physical direction as well as verbal coaxing

Figure 27. Qualitative Scoring Criteria for Sam

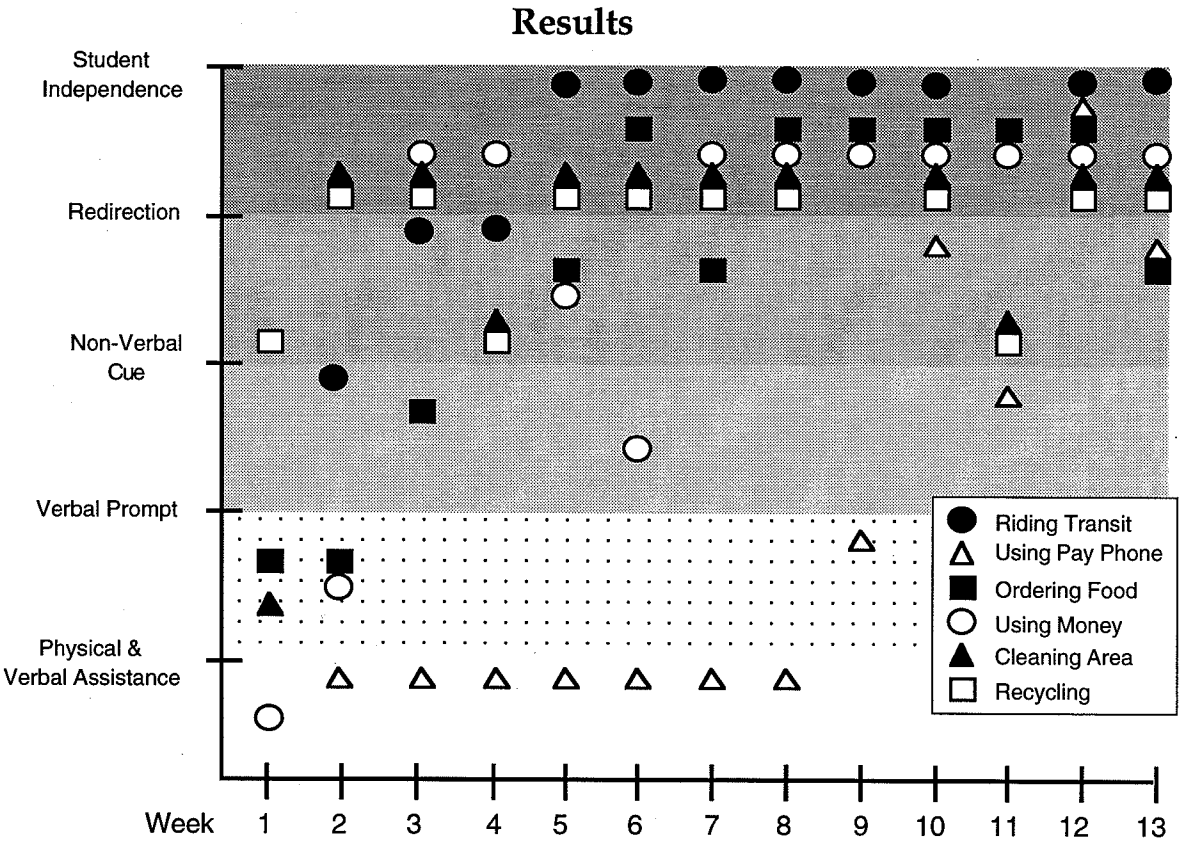


Figure 28. Sam's Progress Towards Community Integration

Sam showed consistent progress in all areas of this study. By the end of the study, Sam was able to perform the required tasks with little or no direction. Using the pay phone appeared to be difficult for Sam, as his progress is much slower than the other tasks. Eventually, Sam was able to use the phone with little or no direction.

Case Study in Progress Monitoring of Letter and Number Recognition

This case study concentrates on the progress made in letter and number recognition and formation for a kindergarten student with motor skill disabilities. Samples were taken of the student's writing while instruction focused on correct formation processes. Through instruction and individual practice, the student was able to increase his letter and number formation, and therefore recognition.

Student Demographic

Fred was a five-year-old kindergarten student who had sporadically attended Headstart for six months prior. He was the youngest of two boys in a single parent home, although he did have contact with his father. His mother was not employed, but was unable to volunteer in the classroom.

In September, the teacher administered the Pre-School Screening (PSS) to all incoming kindergarten students. The PSS looks at areas of Body Awareness Control–Gross Motor (BAC), Visual Perceptual Motor–fine motor (VPM), and language. The test is scored from 1 to 10, with a "1" being potentially in great need and a "10" being at a developmentally low-risk. The PSS does not address behavior or organizational skills.

Fred scored a 1 on the PSS and classroom observations lead the teacher to believe that this child was potentially at-risk in the school setting. The mother was contacted and a meeting set up to evaluate the PSS scores and to recommend further assessment. Fred's older brother was already being served by special education services, so the mother was familiar with the system.

Fred's performance on other published achievement tests were low, as indicated by the following scores:

	Score	Age Equivalency
Batelle (F.M.)	–2.05	4-4
Peabody	84	4-2
Vineland	75	3-3

Fred was able to qualify for special services in the kindergarten program and an IEP was written in the following areas: Gross Motor, Fine Motor, Cognitive, Socialization, and Language Articulation.

Program Description

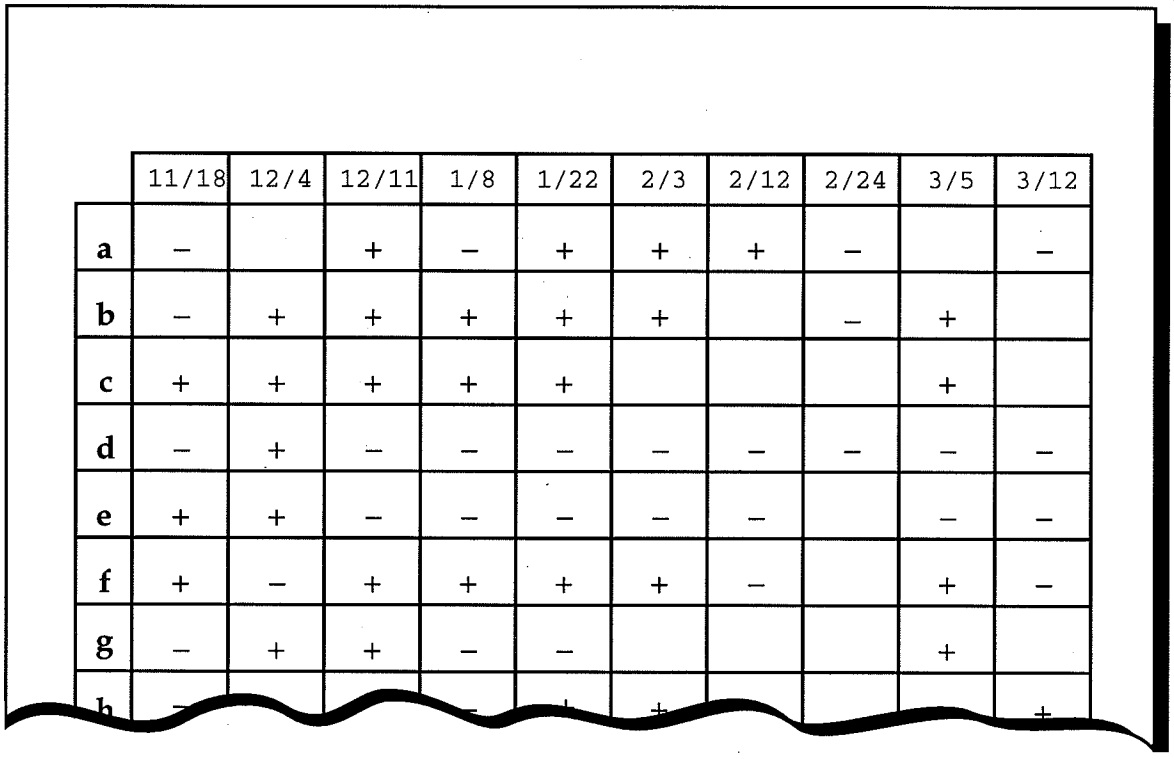
The program in which Fred was enrolled was quite unique. Regular school was in session Monday, Wednesday and Friday (all day) from 8:15 a.m. to 3:00 p.m. The students identified as at-risk attended an additional day,

Tuesday. There were only 12 students on Tuesdays versus 30 on regular days. With this program, the identified 12 students were able to come to school approximately 22 additional days. The school was also on a modified "year-round" calendar: School was in session through June, with three weeks off in December and two and a half weeks in April. During those intersessions, including summer, additional classes for all the students were offered.

Because handwriting and letter formation are critical skills in the first grade, the teacher decided to monitor that aspect of Fred's progress. The students completed a letter formation sample weekly, which were taken during the language block instructional period. Eighteen letters of the alphabet were randomly selected by using the lettered balls of a Bingo game. The eight unselected letters were used in the next sample, along with an additional ten from the previous sample. Each student reproduced each letter one to three times, depending on the student. All of them, however, had eight minutes to complete the sample. Students also were expected to formulate the letters in their first names correctly.

Two methods were used to record data: (a) one to visually show progress, and (b) another to tell the teacher what areas needed further work. The total number of letters formed correctly (of 18) were plotted on a graph, while the letters written incorrectly also were recorded to indicate areas of trouble for the students.

For the letters incorrect, a system of "pluses and minuses" was used to record data (see Figure 29). After each letter was attempted by the student, a "+" was recorded for those which were formed correctly, and a "–" for those which were incorrect. The teachers also used this system to evaluate the students' skill in forming their names.



	11/18	12/4	12/11	1/8	1/22	2/3	2/12	2/24	3/5	3/12
a	–		+	–	+	+	+	–		–
b	–	+	+	+	+	+		–	+	
c	+	+	+	+	+				+	
d	–	+	–	–	–	–	–	–	–	–
e	+	+	–	–	–	–	–		–	–
f	+	–	+	+	+	+	–		+	–
g	–	+	+	–	–				+	
h	–			–	+	+				+

Figure 29. Example Progress Chart for Letter Formation Monitoring

Progress Monitoring System

Fred's main goal was to increase his skills in the area of fine motor to include, but not be limited to, formation of the lowercase d'Nealian letters and numbers (0-9). Fred was also to print his first name correctly using a capital letter at the beginning and lowercase letters for the rest of the name during opening exercises, writing station, or on his paper.

To begin the case study, a letter was introduced and developed using d'Nealian sequencing (writing without the use of lined paper). A new letter was introduced every other day until all letters had been introduced by the end of January. It was hoped that Fred could become competent in the formation of letters and numbers by the end of June, 1993.

Letter formation was introduced in whole groups using three processes: (a) auditory, (b) visual and (c) kinesthetic. Students heard how to form the letter; saw it made on the board; and made the letter in the air, in the palm of their hands, or on a neighbor's back. This activity took approximately five minutes.

The second instructional strategy used was independent practice. The students practiced letter formation using corn meal, salt boxes, shaving cream, or the chalkboard. Other materials included laminated sheets, felt pens, as well as pencil and paper. Students were allowed 8-9 minutes of independent practice each class day.

Although students in kindergarten are expected to know number recognition and formulation up to the number 15, teachers often extend instruction to the number 20. For this case study, the instructional program included numbers up to 70. The numbers were not chosen at random, but selected in like number groups.

Results

Fred showed definite improvement in letter and number recognition and formation. His progress is graphed below.

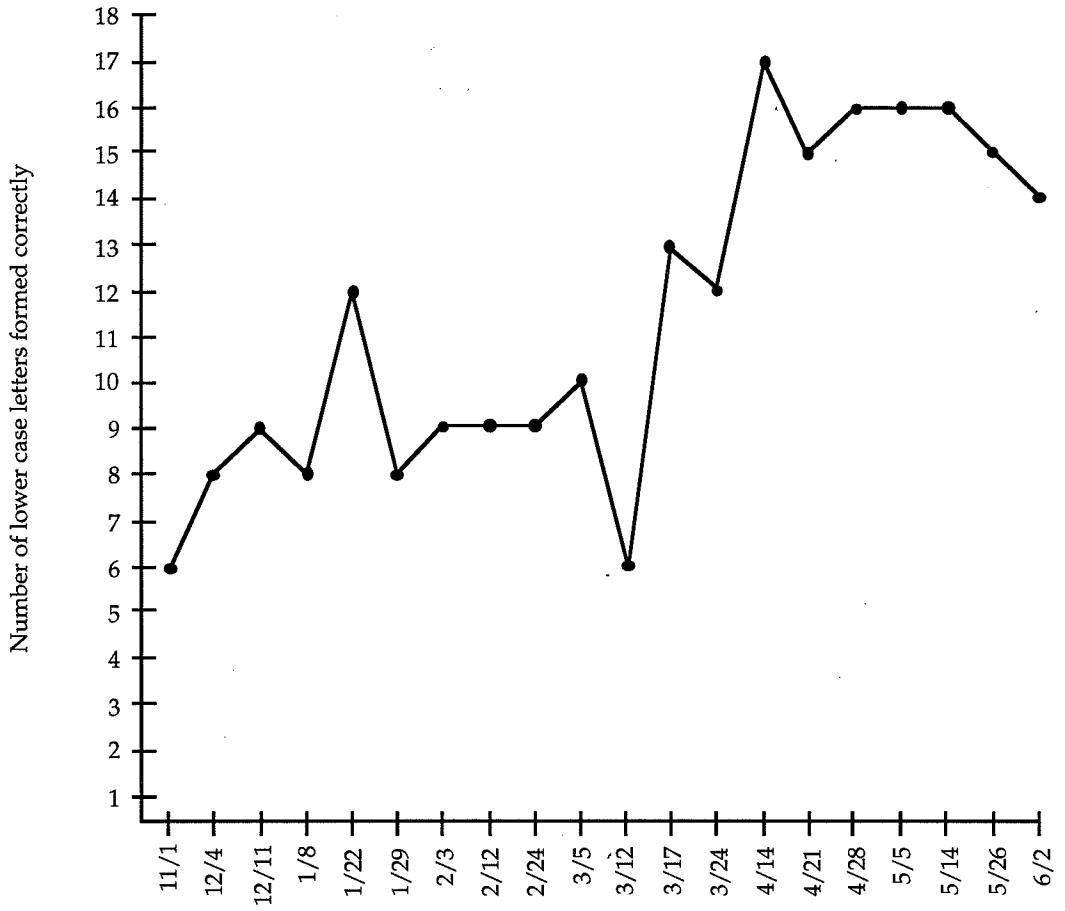


Figure 30. Graphic Representation of Fred's Progress Toward Letter Formation

The quantity of numbers that Fred was able to form grew steadily from the beginning of the program, peaking at nearly 100%. Fred appeared to reach a plateau early in the study at approximately 9-10 numbers formed, but became familiar with the testing measures and progressed further, reaching consistently into the 14-15 numbers formed level. After a severe decline in performance for one week, Fred showed determination in getting back on track.

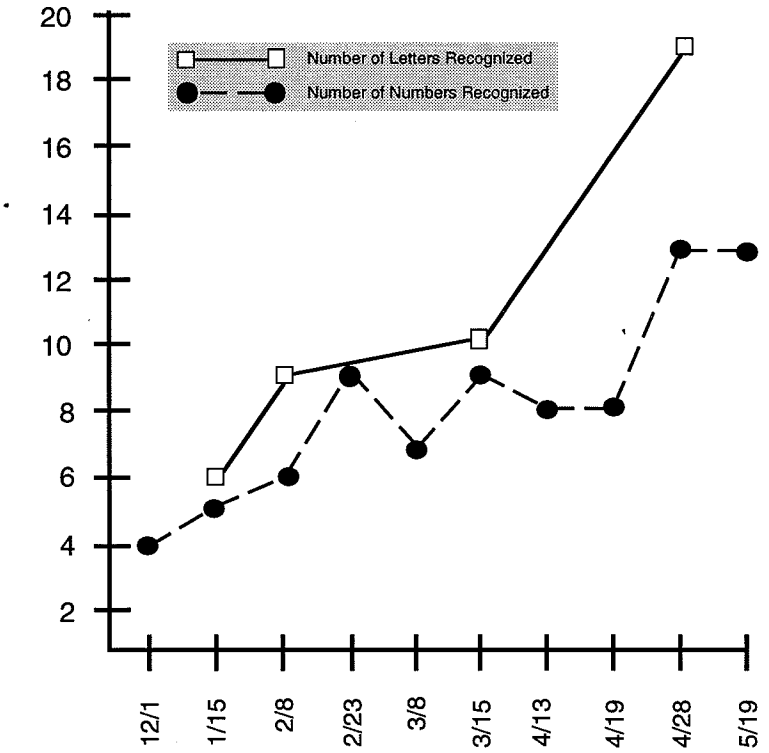


Figure 31. Letter and Number Recognition Progress of Fred

Fred also showed great improvement in the recognition of letters and numbers, more than doubling his recognition totals from the beginning of the study. Although data was collected sporadically for number recognition, definite progress was made over the testing period.

Progress Monitoring in Reading–An Intermediate Resource Room Perspective

This study focused on oral reading prosody and fluency, as well as reading comprehension. The program was based on phonetics, with strong emphases on sight vocabulary as well as written and oral comprehension. All instruction occurred in a resource room. The material increased steadily in level of difficulty and data were taken once or twice a month to monitor progress. In the end, good progress was made in both fluency and comprehension.

Student Demographic

The student in this study, Tom, was 10 years old. He was repeating fourth grade and was determined to have a Specific Learning Disability in the areas of Math and Written Language. Reading was added to his IEP in the fall of 1992 because he was having difficulty in his reading group, and he was no longer eligible for HOSTS/Chapter 1 assistance.

Tom was tested on the Woodcock Johnson Psychoeducational Battery and found to be performing at the 4.6 grade level. Using grade equivalent scores, he scored 3.0 in Reading, 2.7 in Math, and 2.5 in Written Language. On the WISC-R his verbal intelligence was in the average range and performance intelligence in the borderline range.

Tom was born prematurely and continues to be quite small for his age. Lung and heart capacity had been affected by his premature birth. Tom is very sensitive to teasing about his size and has become very feisty to compensate for his small stature. On the other hand, he has used his lack of size as a way to get other students to assist him with his class work, and in some cases, to do it for him. Work taken home often appears to have been done by someone other than Tom.

Tom was in the habit of reading very fast orally and mumbling to cover up word recognition problems. In addition, his homeroom teachers expressed concern about his reading comprehension. When working in the resource room, Tom's program was structured in such a way that he could not rely on others, but had to produce his own work. Tom's schedule for a typical workday was as follows:

8:45 – 9:45	Math (Homeroom)
9:45 – 10:15	Language Activity (Homeroom)
10:30 – 11:30	Reading (Resource Room)
12:45 – 1:30	Writing/Spelling (Resource Room)
1:45 – 2:45	Science/Social Studies (Homeroom)

A 15-minute morning and afternoon recess occurred daily, and lunch recess was held from 11:30 until 12:45.

Program Description

With Tom receiving reading instruction in the Resource Room, his reading group was taught by a staff assistant, and monitored by a special education teacher, who would work in many areas of the room with multiple groups. The teacher and assistant would use recess and lunch times to discuss group progress. The instructional program used was Decoding Strategies, Corrective Reading Decoding B1 and B2, from Science Research Associates, Inc. Tom started the year in Decoding B1, which began at grade 2.5 level and became progressively more difficult, ultimately reaching grade 3.5, lesson 60. Tom then moved to Decoding B2, which began at grade 3.5 level and reaches the 4.5 level at lesson 65.

Each lesson began by teaching a new phonetic skill and reviewing phonetic skills previously taught. There was also a selection of sight vocabulary words that were being used in the accompanying story. Some words were new, although most were introduced for that lesson. An oral test over the new and reviewed words was conducted to measure comprehension. Each story, ranging from 200 to 700 words (increasing in length as the student progressed through the book) was read orally, in turns of three to four sentences. After every 100 to 120 words, Tom was asked oral comprehension questions about the section. When the story was completed, there was a written lesson from the workbook. Part of the workbook covered phonetic/word attack concepts, and part of it consisted of comprehension questions relating to the stories. Finally, Tom was asked to do two oral reading checkouts– one passage of 100 to 120 words from that lesson, and a similar passage from the previous lesson. No more than two or three errors were permitted, and one section was timed. To get credit for that timed section, he must have read at a rate of 90 words per minute or better. A lesson took from 60 to 90 minutes, depending on how well the group did. Tom was in a small group of three, so he received individual attention and an opportunity to perform in the group.

Motivation was addressed at both the group and individual level. A group grade was earned for oral phonetic practice and for the oral reading of the story. Each student then, was committed to the success of each other member of the group. The workbook and reading checkouts were individually graded, and Tom was expected to do these independently.

Progress Monitoring System

Tom's long-term goal, as expressed in his IEP, was to read orally at grade 4.0 level, at 90 words per minute, with comprehension of 90% on four out of five tries. Progress was measured by listening to Tom read a section from one of his stories, and noting how many words per minute he read. Then Tom retold that part of the story in writing. Each story section used for measurement was taken from Corrective Reading, Decoding B. The data

were collected by the special education teacher during the workbook or reading checkouts portion of the reading lesson. The goal was to take data every two to three weeks.

Tom's oral reading also was scored for rate and prosody (expression and expressiveness). Rate was taken from the total number of words read in one minute, as well as words read correctly and incorrectly. Changes in oral reading then, reflect increased speed and accuracy. Prosody was rated on a qualitative scale of 1 to 5 as outlined below (see Figure 32).

1
Reads single words. No "flow." Telegraph-like in sound.
2
Some phrasing is noted (2-3 words).
3
Pauses for ending punctuation. Inflection changes may not be present.
4
Appropriate "flow" and phrasing is noted as well as attention to punctuation with pauses and appropriate inflection most of the time.
5
Reading generally "flows." Voice changes to reflect meaning changes. Appropriate ending inflections.

Figure 32. Qualitative Scoring Scale for Reading Measures

Tom's reading comprehension was measured by a written retell. His retell was scored for total number of words written, total number of thought units written (approximately the equivalent of a complete sentence), and overall quality of the retell. Thought units were scored by counting the number of grammatically correct independent clauses (containing subject, verb, object) Improvement in comprehension was indicated by an increase in number of words and thought units written, and higher ratings for retell quality.

Results

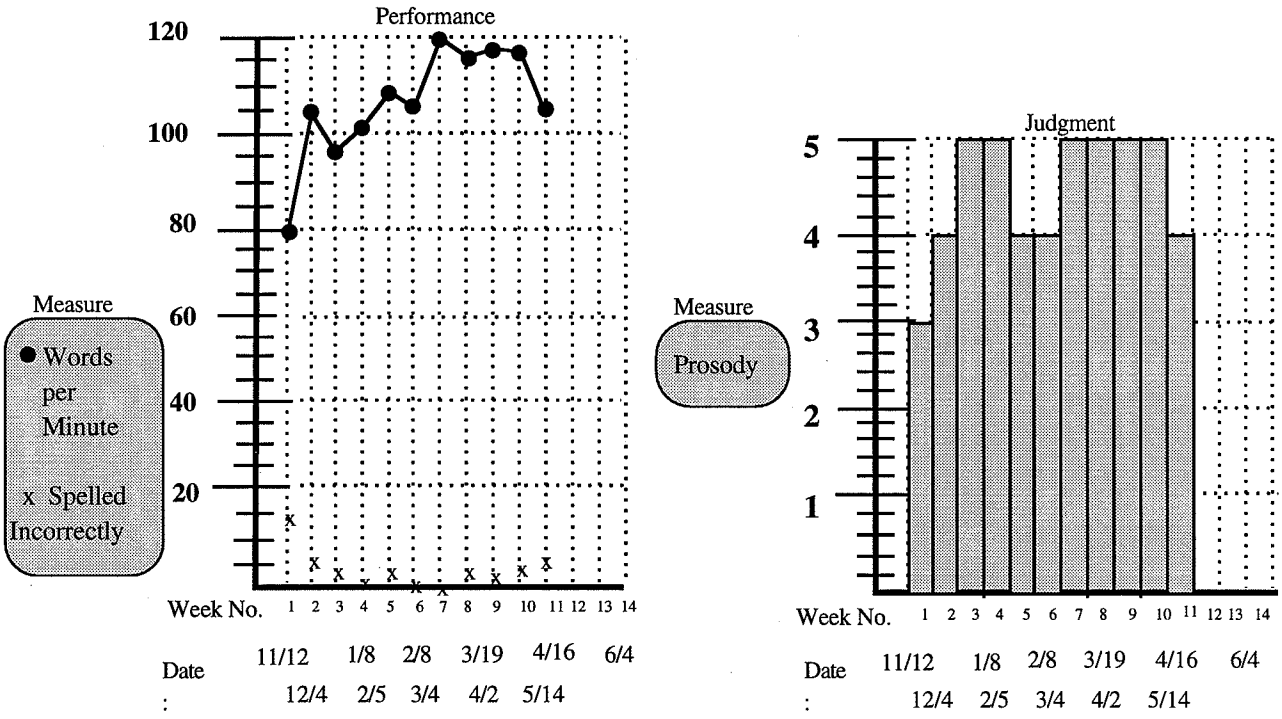
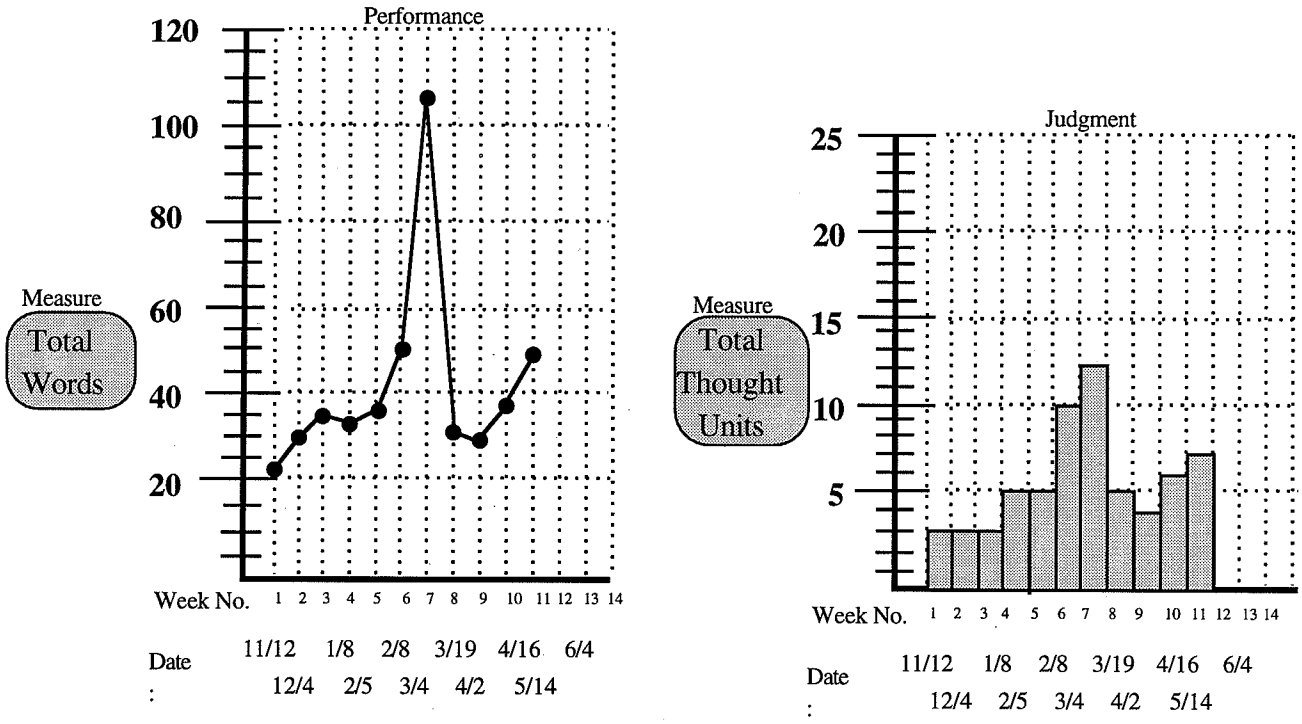


Figure 33. Graphic Representation of Tom's Reading Comprehension

Tom made significant progress in both his oral reading and his reading comprehension. The material steadily increased in level of difficulty, yet Tom demonstrated increased levels of achievement. By the end of the program, Tom was using good phrasing and appropriate voice tone changes for different speakers and narrative styles.



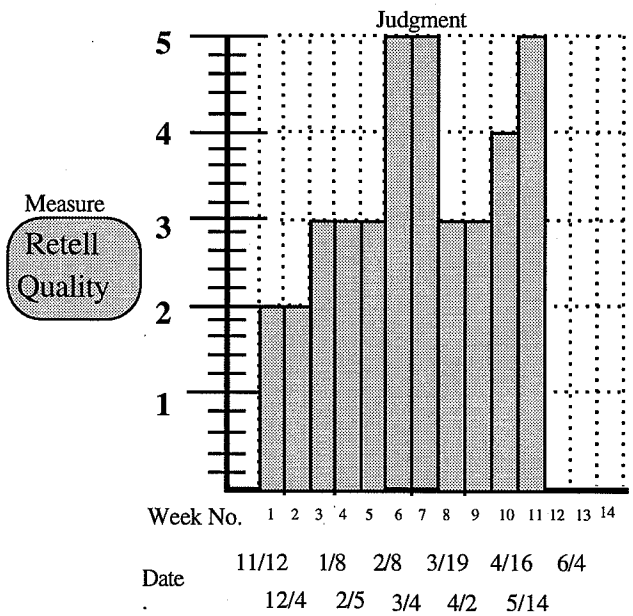


Figure 34. Oral Reading Progress for Tom

Although reading comprehension showed definite improvement, positive results were less obvious than for oral reading. Reading comprehension trended upward but was more affected by Tom's attitude and motivation than was rate of speed. During the session where Tom had the highest scores for both rate and comprehension, he was feeling very positive

about himself, his peers, school, and life in general. His scores for comprehension were down for the next two sessions, a time in which he was having trouble with his best friend. Changes in instructional methods were not made during this study because Tom made steady progress, with few exceptions.

Monitoring of Reading Fluency

This case study describes reading fluency for a fourth grade student with serious behavioral disabilities who was withdrawn and lethargic in class. His reading had been slow and he had not shown great progress in any academic area. The long-term goal was to improve Brent's reading fluency and to monitor his reading accuracy.

Student Demographic

Brent was 10 years old and in the fourth grade. Brent lives with his father and stepmother and two siblings. He was found to have a great deal of difficulty staying on task, especially in the regular classroom. He completed very little work and was lethargic and moody. Brent had difficulty expressing anger appropriately and was seen by a physician and was evaluated for possible childhood depression.

Brent's reading was evaluated in September, 1992, with the *Hudson Education Skills Inventory.* He could read the first grade level passage at a rate of 59 words per minute with 95% accuracy. He answered comprehension questions with 75% accuracy. He had difficulties with both decoding and comprehension skills.

Program Description

Brent was receiving 45 minutes per day of reading instruction in the resource room. Contacts were made weekly with his regular classroom teacher. He also was encouraged to participate in reading activities in his regular classroom as much as possible. He was capable of reading some of the regular reading assignments in his classroom, but he usually did participate in a large group.

Table 1. Academic schedule for Brent.

Brent's Schedule	
Reading	9:00-9:45 daily
Written Expression	1:00-1:30 daily
Math	1:30- 2:15 daily

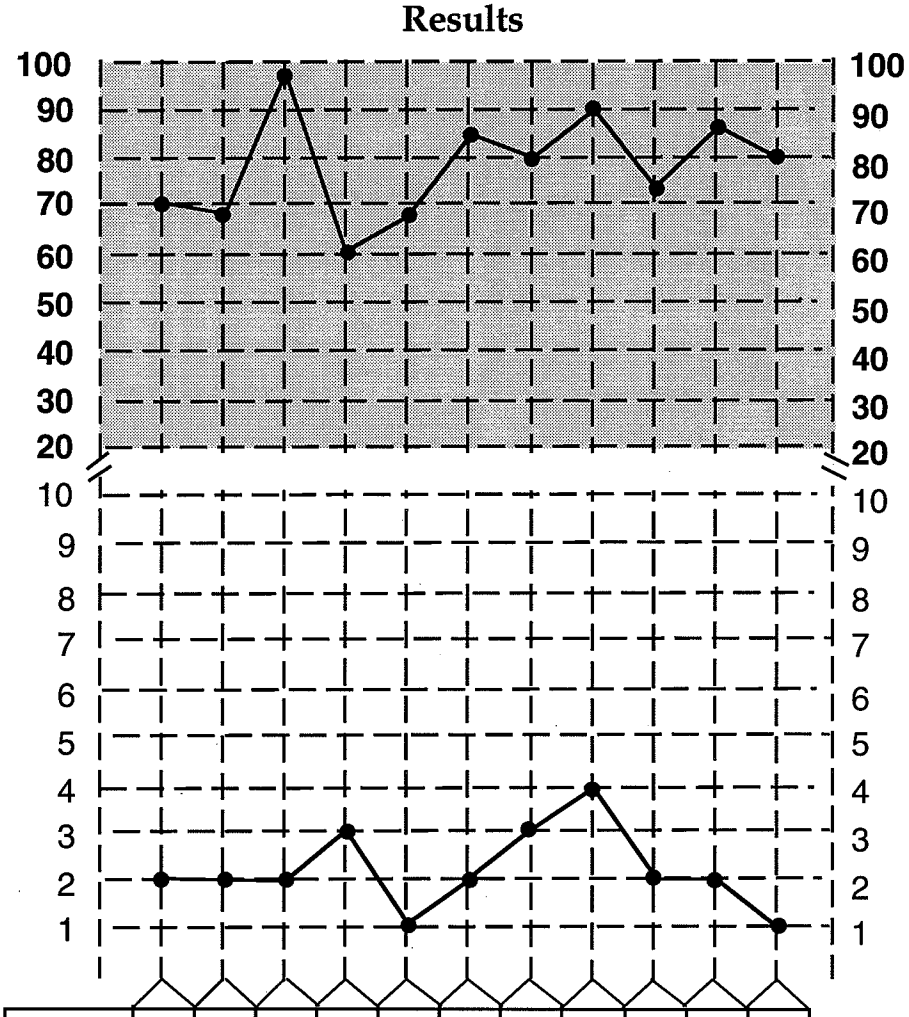
The instructional program was delivered by the special education teacher in the resource room. The core curriculum was *Reading Mastery II* completed daily in a small group setting, while supplementary activities included reading short stories in the *Multiple Skills Series (Barnell Loft), Reading Mastery* seat work, and reading books from the *Literacy 2000* series.

All students, including Brent, were on a reinforcement system in which they received stamps on a card for completing work and demonstrating appropriate behavior in the classroom. For example, one stamp for participating satisfactorily in the reading group (oral lesson), one stamp for oral reading of the story which accompanied the lesson, and one

stamp for doing the written part of the lesson. Stamps were "spent" on Fridays for reinforcers such as free time, coloring sheets, pencils, or popcorn.

Progress Monitoring System

Since Brent was reading approximately two years below grade level and lacked fluency, an appropriate long-term goal was to increase his reading fluency. Through increased fluency, the desired outcome was to improve his reading decoding and comprehension skills. A one-minute timed sample of oral reading, which served as the performance measure, also was graphed to show the number of words read (rate) and the number of errors made. Samples were taken in 2-3 week intervals during small group reading. The *Reading Mastery* curriculum, *Barnell Loft Multiple Skills* series, and books from the *Literacy 2000* series were used. Measurement samples were of materials not previously read at all (*Literacy 2000* books) or material that had not been read for at least three weeks. Brent's progress was graphed as displayed below.



date	12/9	1/14	1/29	2/5	2/17	3/15	4/19	5/3	5/19	5/27	6/3
correct	70	68	99	60	69	86	80	90	74	88	80
error	2	2	2	3	1	2	3	4	2	2	1

Figure 35. Graphic Representation of Brent's Progress

Brent showed a slight increase in reading fluency, and he became an accurate reader, as reflected in the graph of errors. In order for the system to be more useful, the measurement system needs expansion into other areas, such as comprehension.

Brent did, however, show progress behaviorally, although it is a measure that was not a formal part of this monitoring system. For example, when I first began timing his reading in December, Brent would often put his head down, verbally express negative comments, or push his chair away from the table. He has changed from a very reluctant reader to a student who frequently chooses to read in his free time. He is much less reluctant to be timed.

In April when the *Hudson Education Skills Inventory* was re-administered, Brent showed definite improvement. He was able to read the second grade level selection at a rate of 79 words per minute with 97% accuracy. He answered comprehension questions with 100% accuracy.

Changes made in Brent's program were related more to behavior than to the actual reading instruction. Brent responded well to direct instruction. I worked on giving Brent positive feedback (verbal praise) as frequently as possible for his reading and tried to be extremely consistent in using motivational techniques to encourage positive reading behavior.

A formative qualitative measure, in addition to the existing quantitative measures, would contribute to the effective measurement of the student's reading fluency. Since Brent's behavior seemed to be directly correlated to how he responded to the timings, a qualitative rating could isolate the behavior variable from the student's actual reading fluency.

Progress Monitoring of Oral Responses

This study tracked a 3-year old child's oral responses to pictures. The goal was two-fold: (1) increase the number of vocalizations and speech behaviors performed at appropriate times, and (2) use words in combination to form appropriate phrases and sentences.

Student Demographic

Crystal was in a developmental preschool program with about 10 children in her class. While the students had a variety of disabilities, most were communicative problems. Crystal's IQ was rated normal on the *Slosson*. Physically she was rated at about 16 months, while academically she appeared at 18 months. On the *Alpern-Boll* her language age was about 24 months.

Crystal had Soto's syndrome, which is a growth disorder that causes the body to grow larger than normally expected. She was larger than most four-year-olds. Her language development was significantly delayed, functioning near the two-year level, using some 2-4 word phrases. When she entered the program in late fall, her behavior was characterized by screaming, falling to the floor, attending sporadically and briefly, and using largely unintelligible sounds. She used some intelligible words, but most were largely rote expressions and with little communicative value. Rather she communicated generally by gestures, bodily actions, and screaming.

Program Description

To measure how Crystal responded at different times, she was monitored at different activities and at different times of the day.

Progress Monitoring System

For purposes of collecting data on Crystal's language use and development, the teacher and assistants developed a scale to monitor her progress which had to be modified, as she progressed beyond the initial scale. This modified monitoring system was based on the quality of her responses to the first 10 direct questions/directions presented in the presence of pictures and objects. The scores for each question were recorded and totaled to arrive at Crystal's rating. The scale was administered by a language educational assistant who had very good rapport with Crystal.

5
On topic; understandable; relevant to topic
4
Generally on topic and understandable, but requires prompt
3
Responds with encouragement; needs stronger prompts
2
Responds verbally, but not on-task; uses repetitive questions
1
Not relevant or responsive to task; refuses to comply

Figure 36. Qualitative Rating Scale

Results

Date	Score
3/3	23
3/3	24
3/15	36
3/25	31
4/18	21
4/18	26
4/23	30
4/23	19
5/7	36
5/9	20
5/13	29
5/15	45
5/15	31
6/1	34
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6/2	34
6/2	34
6/3	46
6/3	39
6/4	40
6/4	35

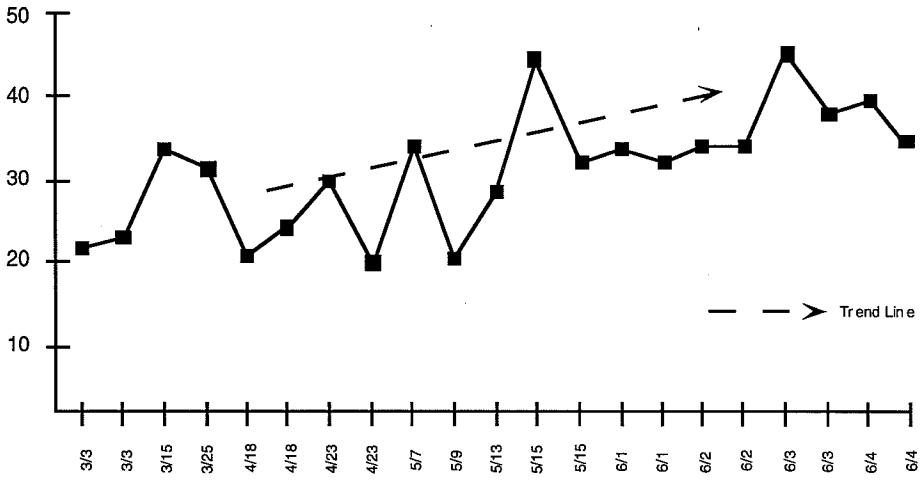

Figure 37. Crystal's Progress Toward Oral Response

At the beginning of the program, Crystal was erratic in her responses, as well as her ability to maintain on-task behavior. When she was on-task and responding as desired, she produced responses that were higher quality. When off-task, Crystal's responses were much less communicative and far below what was needed for useful communication skills.

Crystal showed improvement from early work, although the present scale may not record true improvement, only the typical behavior of on-task behavior in some periods and off-task behavior in other periods. The teachers were unable to determine ways to direct her language utterances to arrive at a more consistent pattern, although variety and quality of visual stimuli seemed to be moderately effective. Most of Crystal's better scores came when she was shown simpler pictures.

Progress Monitoring of On-Task Language Behavior

Clyde, the student in this study, was a four-year-old with minimum verbalization. Most responses were screams and shrieks and he showed very limited imitative skills. His attention span was measured in seconds. The program was designed to monitor on-task and appropriate verbal responses.

Student Demographic

Clyde was judged 90%+ unintelligible when he began the program in late fall. Clyde communicated largely by gestures, noises and screams. He was demanding, impatient and loud. He was not able to imitate sounds, let alone words, with any consistency. It was as though he was totally oblivious to his mouth, lips, teeth, and tongue functions. His hearing was normal.

Clyde was unable to complete test protocols at the evaluation clinic intake. Observations at play and some interactions allowed staff to conclude that he was significantly delayed in both receptive and expressive language and articulation areas. Clyde's motor skills were observed to be within normal ranges, and the psychologist felt that he was probably functions within the normal range cognitively. Social skills on the *Scales of Independent Behavior*, using the mother as a respondent, indicated that he was well below average.

Speech and language could not be tested directly using standardized methods but were observed in play. Clyde's mother also was interviewed.

Program Description

Clyde was monitored in small group and one-on-one situations to generate two measures: percentage of time on-task, and the quality of communication and interaction skills used with others. A qualitative scale was developed for measuring Clyde's quality of group interaction. Data were collected weekly over a three-month period.

Progress Monitoring System

Clyde was monitored for a five-minute period once a week by the language educational assistant. A chart was developed to monitor Clyde, as well as four other children. Responses were measured on a qualitative scale (see Figure 38) of social interaction and communication. A 1-5 rating was assigned to each communication Clyde used in small groups.

Score	Quality	Comments
5	Initiates with peers, verbally expresses ideas, socially appropriate, creative and interactive play	On-task and interaction socially and appropriately, showing initiative.
4	Some oral response to cues, cooperates with prompts, cues, some interaction with peers	Generally on-task with some interaction. Responds to suggestions for interaction, communication.
3	Cooperating with others, parallel play, complying with assistance from staff	Most frequently this is characterized by parallel play.
2	Looks, attends, watches others, no communication, not responsive, ignores	Not desired behavior, but at least attending some, and not negative, counter-productive behavior.
1	No response, off-task, non-social behavior, leaves task area	Usually noted when the child goes off by self, refuses to play or interact with others, disregards staff suggestions and/or directives.

Figure 38. Qualitative Scale for Measurement of Clyde's Language Progress

Results

Date	On-task	Quality
3/3	80%	40
3/10	100%	38
3/17	100%	43
3/31	60%	25
4/21	90%	36
4/28	70%	27
6/2	100%	36

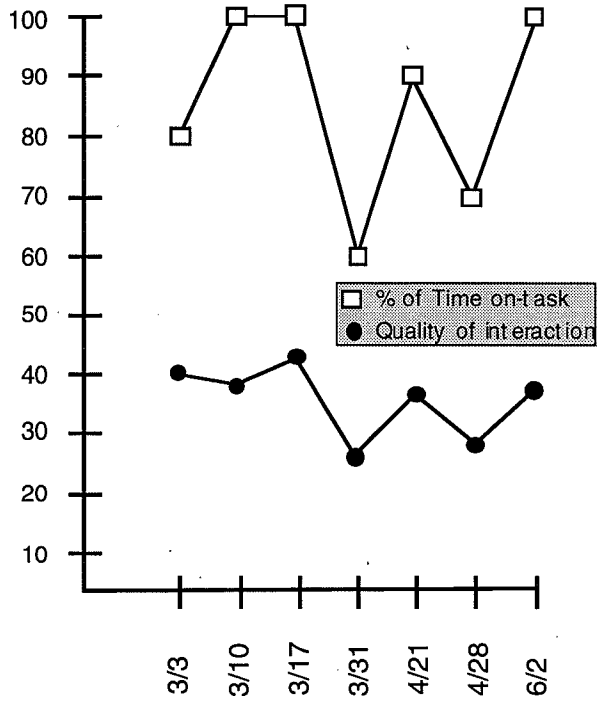

Figure 39. Clyde's Progress in Language Usage and Interaction

At the end of the program, Clyde was able to maintain on-task behavior, cooperate with the activity or game, and interact with teacher and students for about 10-15 minutes. This was a dramatic improvement over his usual behavior. In the language and play activities, Clyde was still having trouble waiting his turn and responding to others appropriately without the teacher or assistant eliciting a response. Occasionally, he still used screams to get attention and to get his way in a one-on-one play situation. Clyde tended to produce much higher levels of response when he was closely monitored, redirected, and encouraged to respond with words.

Progress Monitoring in Speech Articulation

This program was conducted by a communication disorders specialist working with students in grades K-12. Two students were selected to participate. Both were elementary level students: one a nine year-old second grader in special education and the other a nine year-old third grader in a regular education curriculum. Both students received direct instruction in small group for remediation of articulation disorders.

Therapy was conducted on a weekly basis. Monthly samples of data sheets were graphed to chart both students' progress throughout the year. Both students demonstrated steady positive growth over the course of the year.

Student Demographic

Donald was a third grader identified as Communication Disordered due to misarticulation of s, s-blends, and z sounds. Donald participated fully in a regular education curriculum with the exception of 20 minutes each week in speech therapy.

Paul was a second grader receiving assistance with reading, written language, and math from the special education staff. He also received speech therapy due to an articulation disorder. In the fall of 1992, Paul consistently misarticulated r, r-blends, and the unstressed vocalic r.

Program Description

Throughout the '92-'93 school year Donald has been seen in small groups and one-on-one for articulation therapy. Speech therapy focused on s, s-blends and z at the word and sentence level. Monthly measures of oral reading from various pleasure books were used to identify generalizing of skills.

Paul was seen 30 minutes each week for small group instruction in speech therapy. All instruction was provided by the Communication Disorders Specialist. Instructional strategies included oral motor training, word drills with articulation cards, games, work sheets, and storytelling.

Progress Monitoring System

The goal for Donald was to say s, s-blends, and z in conversation with 90% accuracy. Word drills, card games and word games were utilized to elicit these target sounds, beginning with isolation and moving to oral reading.

Paul's goal was to use r, r-blends, and the unstressed vocalic r in conversation also with 90% accuracy. The same instructional strategies were used to encourage proper tongue placement, and therefore elicit the correct sounds.

Data were collected each session by the CDS and recorded on data collection sheets. For purposes of monitoring progress, a sample of each student's performance was graphed.

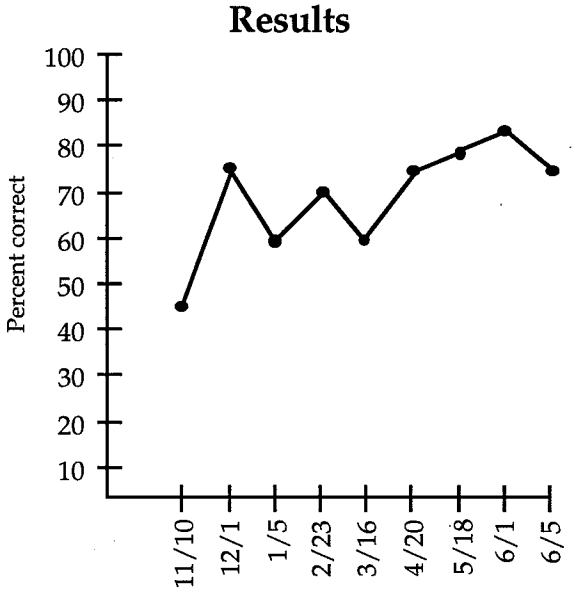

Figure 40. Graphic Representation of Donald's Progress Toward Speech Articulation

Donald progressed at a steady rate throughout the study. By the end of the treatment program, Donald had reached 76% accuracy at a spontaneous, conversational level. Although the long-term goal was not achieved, Donald showed continuing progress, which could eventually reach the 90% level.

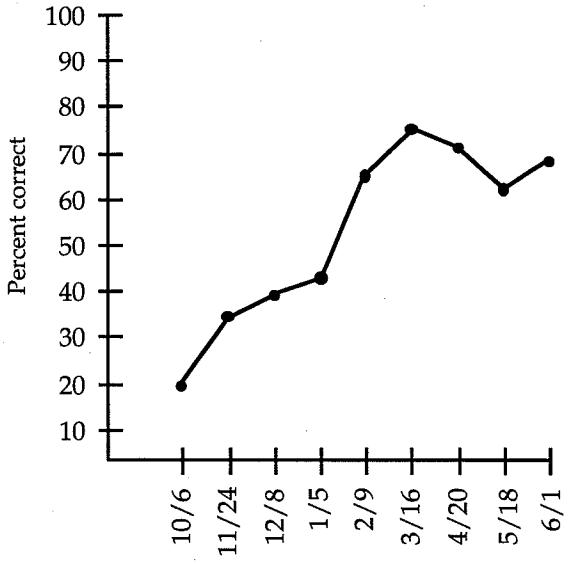

Figure 41. Graphic Representation of Paul's Progress Toward Speech Articulation

At the onset of therapy, Paul was able to produce the target sound in isolation with 20% accuracy. Treatment moved up a hierarchy of difficulty from isolation to the target sound in words, phrases, sentences, and monologues, with the terminal objective being 90% accuracy at a conversational level. As demonstrated on the graph, Paul progressed at a rapid rate. By the end of the treatment period, Paul was 70% accurate producing the target sound at a storytelling (monologue) level. Paul did not met his long-term IEP goal but is well on his way.

Progress Monitoring in Math

This case displays math progress monitoring of a fifth grade resource room student with instruction based in the regular classroom. This monitoring system was designed to reduce opportunity for loss of function and to increase knowledge retention from early in the academic year. Frequent probes, including all problem types covered from the beginning of the year, were given. Individual review tests were followed up by resets. More long-term growth was noted with review tests than on initial probes alone.

Student Demographic

At the time of the study, Pete was 11 years old and recently had been placed in a regular classroom with resource room support. Pete came from a self-contained placement children with mild retardation and severe learning disabilities. Pete was of average intelligence with a severe disability in reading and written language. He was classified as hard of hearing based on a history of chronic ear infections in early childhood. Pete had a history of behavioral problems ranging from stubbornness to tantrum-type behavior, which had been reduced to intermittent stubborn behavior and work-avoidance habits.

Pete's new placement in the regular classroom was an extreme move; his self-esteem soared, his behaviors almost completely normalized, and he began functioning successfully in a number of areas in the classroom. Pete was able to think logically; therefore math was his strongest subject. Adding to Pete's progress was an increased stability at home with a new (step) father and improved financial situation.

Pete was in a pull-out program for reading and parts of his language/spelling and math programs. Social studies and science were received entirely in his regular classroom with some curricular adaptations and assistance with projects and reports. Pete enjoyed going to the resource room and thrived on one-on-one or small group instruction. The teacher felt, however, that it was to Pete's benefit to be a part of a normal classroom for a large part of his daily schedule, exposing him to large-group instruction and situations requiring him to pay attention to a classroom teacher, an overhead projector, cooperative learning groups, and other modes of learning more closely tied to the regular learning environment. Although initially found to be unable or resistant to attending to and benefiting from these situations, Pete showed progress in all subjects and increased willingness to participate in regular classroom activities and assignments.

Program Description

Tested in May, 1992, Pete's math scores on standardized tests ranged from grade levels 4.3 to 4.7. When Pete first began the program he was using tally marks for all operations, including multiplication and division. He had a good number sense and remarkably good accuracy using this system, but it was obviously a slow and cumbersome method of computation.

In the resource room, he was taught Touch Math, which he picked up very quickly. He was eager to acquire knowledge which would fill in the debilitating knowledge and skill gaps in subjects he liked. He immediately gave up the tally marks and switched to the newer, more efficient system.

At the school Pete attended, the fifth grade operated on an ability-grouping system in math. There were approximately 20 students, either in resource room, LAP, or only slightly above the LAP math qualifying scores. This service model, with two LAP math aides present during instruction, as well as the resource room teacher, worked ideally. A 1:5 teacher-student ratio allowed almost immediate assistance and feedback during work time.

The classroom teacher did all the instruction at a much slower pace than she used with her other math group, but used the regular *Real Math* textbook and the overhead projector. The teacher worked step-by-step through several sample problems, which the students copied and solved on their own worksheets. Following instruction, students were given 20 minutes to complete the problems.

Progress Monitoring System

A test of 20 problems, covering all types of problems introduced and practiced since the beginning of the year, was developed. On each testing day, a second set of problems also was used: five word problems covered all four basic operations, use of money problems, a two-step problem, and later in the year, problems involving decimals, fractions, and measurement. These applied math problems were used because they were more tied to real life situations and they were goals set forth in the student's Individualized Education Plans (IEPs).

After initial testing, students would receive resource room instruction and review. Problems similar to those from the test would be written on the blackboard. One student would volunteer to work out the problem while others corrected along on their own tests. Each student was given the opportunity to solve as many problems as they could of the types on which they had erred. Worksheets were prepared for the next day with problems similar to those from the test. At the end of a week of review, a slightly revised, but very similar, test was given.

The students were not timed, as the teacher felt this would inhibit their performance. They were expected to complete their tests in a half-hour, and in Pete's case, this was never a problem. The tests were scored on the percentage of correct answers. The retest scores have been included on the graph below to show progress made after review. This was useful for two

reasons: (a) progress could be noted from the first test over the new skill to the post-review test, and (b) the loss of learning between the previous post-review test and the subsequent test over a new skill could be seen.

Results

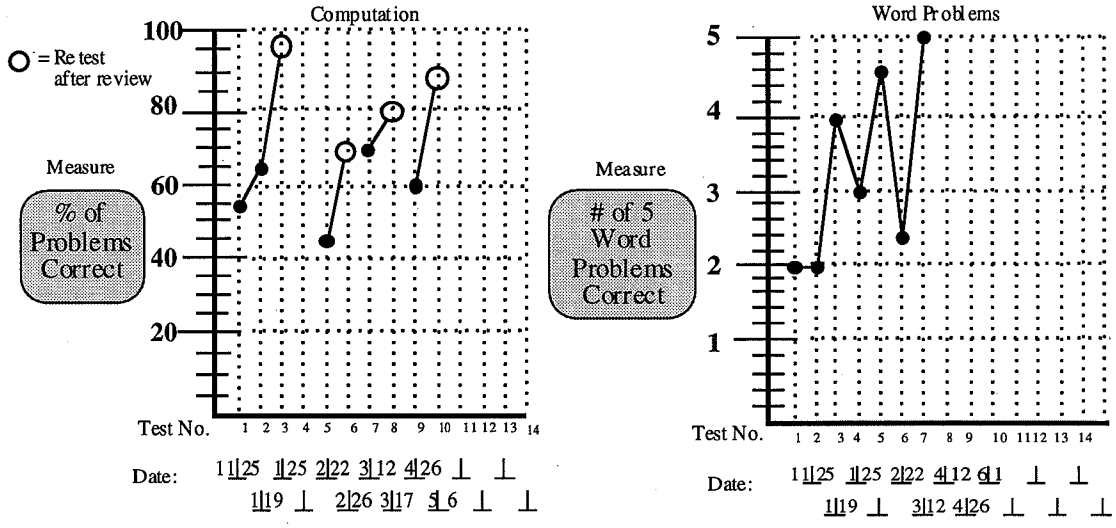

Figure 42. Pete's Progress in Math Skills with Retest Scores

Pete showed significant improvement between the initial test and the retest in all cases, although there was a drop in performance from the post-review test to the next skills test in all but one instance. Pete's scores on the word problems, showed a definite upward trend, with Pete scoring a 5 on the final measure.

These data demonstrate that this approach to math instruction has benefited Pete. He maintained skills introduced early in the year, while acquiring and mastering new skills as he progressed through the year. After the initial drop from post-review test to the next-skill test, it was apparent that review sessions were necessary for Pete and his fellow resource room students. Once the review program was implemented, scores began to rise.

Progress Monitoring of Student with Algebraic Instruction

The student in this case study, Gordon, was placed in a small group with students at varying math levels within the resource room. The group was instructed, then given pre-algebra worksheets to be completed. Once finished, the student was asked to self-correct the test; if the number of errors was too high, the exercise was retaught and the student retested.

Student Demographic

Gordon was a 13-year-old seventh grader. His IQ was normal, but his academics showed depressed scores. He also was hard of hearing. Gordon was a friendly, but under-motivated student, as he complained about assignments and expectations. He was somewhat isolated from his peers, but overall Gordon seemed to get along well with them as well as adults. Gordon received resource room instruction for math and language arts.

Program Description

Each week, Gordon spent 23 hours attending regular education programs, including home room and physical education classes. Seven hours per week were spent in special education classes.

Gordon's progress in regular education was tracked by the resource room through handwritten forms sent home every two months and through verbal consultations with teachers. Parent meetings were held during parent teacher conferences three times per year. Multi disciplinary team (MDT) meetings were called to exchange information.

Resource room teachers delivered all of the math instruction and monitoring procedures. Gordon showed abilities in math comprehension and application to warrant placement in a pre-algebra/algebra workbook. This curriculum was combined with fraction practice and metric/standard conversions. The worksheets contained the main idea and rules involved in the lesson, plus two or three exercise sets. The materials for this activity included a workpage with ideas and rules for reference, and pencils. The instructions were given prior to the student working independently. The student self-corrected the exercise when completed. If the errors were too high, the page was repeated and retaught. This task was done five days a week, and if the student met the instructor's expectations for effort and cooperation (not correct answers), the student was rewarded with 8 minutes of "free time." Games and classroom computers were made available for free time activities.

Progress Monitoring System

The progress monitoring system in this case reflected the percentage of correct answers and the number of prompts given by the teacher. Prompts were measured as the number of times Gordon was unable to answer a problem without teacher assistance. The long-term goal was to show the student's ability to operate with algebraic concepts independently. Concepts were introduced in October, 1992, with the student was starting at the foundations level of the workbook in November. Students worked on the fundamentals such as the distributive property of multiplication. Algebraic concepts such as order of operations were introduced in December. All students were moved onto one variable problems in January, 1993.

Starting in January of 1993, students used skills already learned to solve for one variable. In February of 1993, students practiced higher level skills.

Results

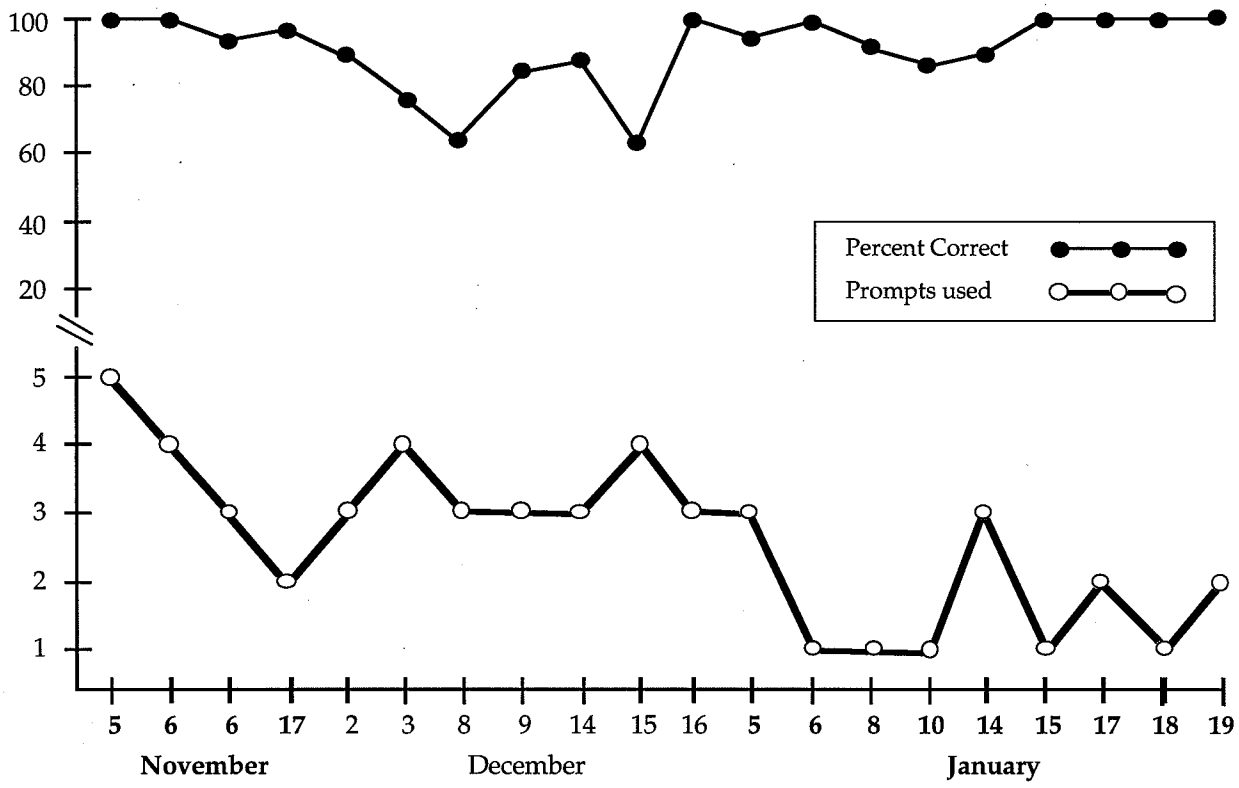

Figure 43. Gordon's Progress Working with Algebraic Concepts Independently

Although it was difficult to measure Gordon's progress (in improving the percentage of problems correct) because of his already high scores, progress was shown in the decreased number of prompts used. In the end, Gordon was able to become more independent in his algebra work while maintaining high scores on exercises.

A Case in a High School Resource Room Math Program

This study involves monitoring the progress of a high school resource room student with low math skills. The objective of this study was to directly monitor the student's math progress for the school year and adjust teaching techniques to ensure positive progress.

Student Demographic

Louie was a 15 year old student with learning disabilities in the ninth grade. His math level was only 4.2 years, but he had mastered addition, subtraction, multiplication and three-number division skills. Louie had limited attention span in most educational settings and often became frustrated. He also had peer relation problems and would avoid regular education students, if possible. Although Louie received adequate support at home, he had a low self esteem. His parents were often discouraged and would lose faith with strategies over time. Louie was mainstreamed in some regular education classes, however, he was in the resource room for all academic basics because of the extreme difficulties he would face outside the special education setting.

Program Description

The program was administered five hours per week in the Math Resource Room. The materials used were primarily categorized assignment sheets in conjunction with a text book. A unit of consumer math also was explored using newspapers and magazines. Students progressed through addition, subtraction, multiplication, division, decimals, percents and fractions, as well as limited algebra and geometry basics. Students were asked to apply information learned to everyday life in consumer math.

Positive reinforcement, individual help with encouragement, and a points program with privileges in the classroom were used as motivational strategies. Other motivational strategies included hands-on relevant math programs, individual contracts, parent contacts with students, and self-evaluating graphs. Monitoring strategies were also employed: Rules with points were used to ensure a conducive learning environment. Points were awarded for being on time, following directions, and completing assignments with satisfactory marks. The points could be used by the students to "buy" privileges.

Progress Monitoring System

Progress in math was measured over a period of one semester. Two goals were set forth: (a) To have students progress through the functions of math, and (b) to have students complete daily assignments with a 70 percent

accuracy rate or better. Student self-evaluation graphs were given each week to monitor daily assignments.

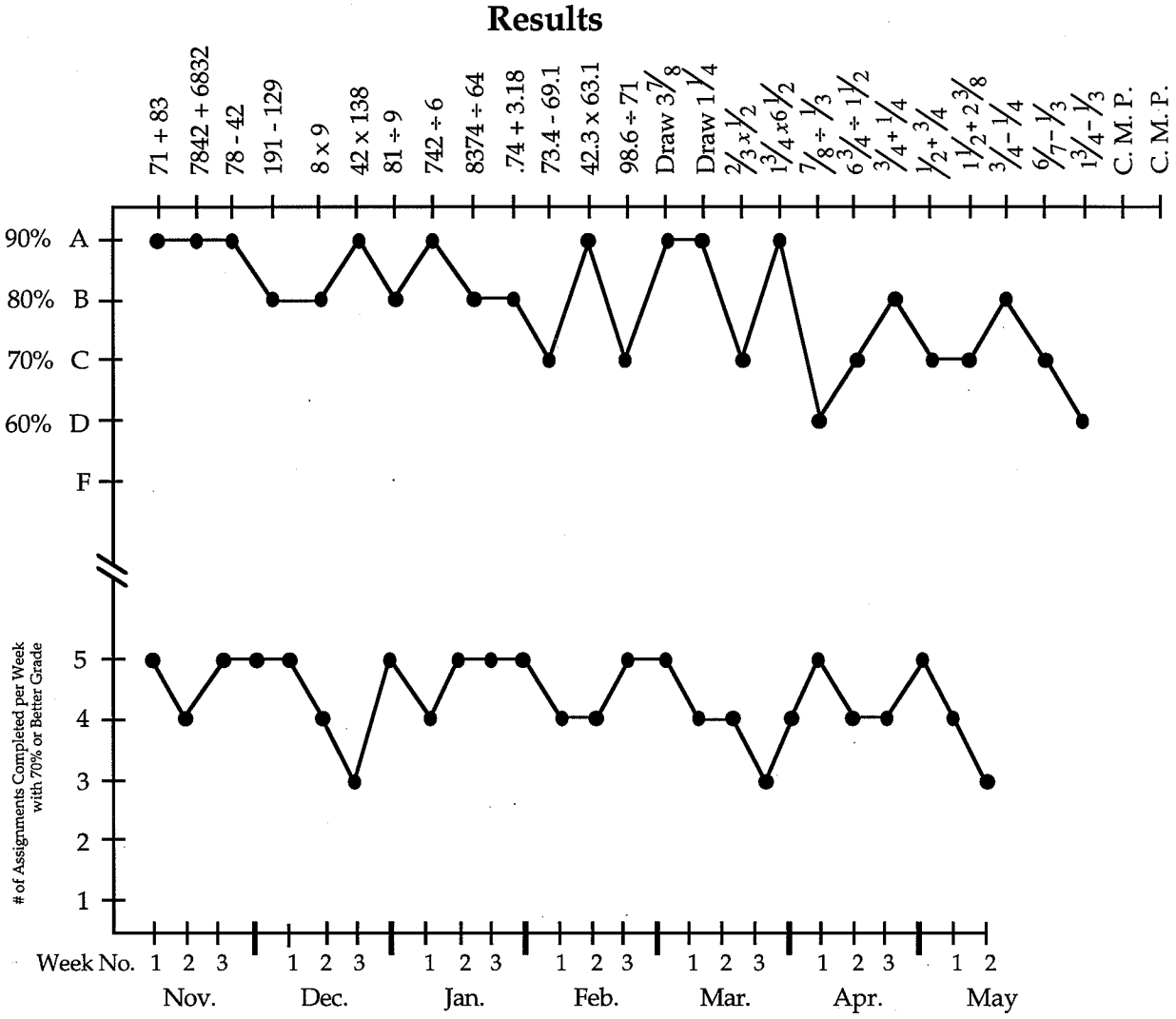

Figure 44. Louie's Math Progress

The evaluation of his academic math work indicated that Louie had scored 70 percent or better in calculating division, decimals, percents, fractions, measuring problems, and from calculations of positive and negative numbers. Louie also progressed through the consumer math program with passing grades. Furthermore, he appeared to have developed a more positive attitude toward math work, as evident with his increased effort; handing in 145 out of the 150 assignments given to him. Plans have been made, therefore, to have Louie mainstreamed in one of his math classes next year.