3. Computer program for analyzing data. The data were all entered and analyzed by the Minitab program, which was developed by Owen R. White at the University of Washington. The procedure for determining the slope accuracy scores will be sent on request.

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USING PRECISION TEACHING TO TEACH PRECISION TEACHING

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Odd, isn't it, how many of us in preservice or inservice teacher training find ourselves recommending, or even mandating, that our students use procedures with their pupils that we do not use? We found this to be true recently when examining the Precision Teaching course at Western Washington University (WWU).

Precision Teaching is part of the core curriculum for special education students at WWU. Since the course is time consuming and demanding, we have alternated responsibility and each teach the course twice a year. We have been teaching chart-based evaluation since 1969 in a variety of preservice and inservice settings (University of Washington, Australia, University of Alberta and WWU). Over time, as with many college courses, the structure of the course has been modified. We began with a lecture orientation which included a self-project component. This practice in charting proved so useful that a field-based practicum was included. Specified objectives to be mastered were refined and finally a fluency requirement was included. All were good changes and improved the course in terms of both student evaluations and our own intuitive feelings.

Somewhere along the line, however, we had neglected the obvious. We were not using the essentials of Precision Teaching with our own students. Although they were asked to work to mastery or even fluency on specified objectives, there were no daily samples and students were not charting their own learning of Precision Teaching skills.

Fortunately, morning follows night, and the light finally dawned. Once we realized that we should be practicing what we were preaching, it did not take long to reorganize the course. We hoped that we might also be able to demonstrate for our students how to conduct daily timings on fairly complex material with 30 to 35 pupils each day and still have time for lecture and discussion.

We had previously divided the course into eight major units: 1) Terminology, 2) Pinpointing, 3) Charting, 4) Preparing Probes, 5) Reading and Drawing Celeration Lines, 6) Learning Hierarchy, 7) Making Decisions From Data, and 8) Principles of Behavior. The next step was to prepare probes and procedures that would allow students to time themselves or each other. For five of the eight units, flashcards (see-say) seemed to be the most efficient format for a probe. Table 1 shows probes and sample flash cards from the eight units.

The first five minutes of each class were spent timing and charting the probes. Students usually chose to reach aims on one unit before beginning the next, but they were able to take a timing on more than one skill if they chose. Students charted their own performance data on each unit and used the same data decision rules they were using with their pupils to determine if their growth was adequate.

The instructors reviewed the student charts twice a quarter (midterm and final) unless a student requested help. Students were responsible for selecting and implementing their own instructional or motivational changes. Aims

Table 1

Probes and Sample Flash Cards from the Eight Units of the Precision Teaching Course at Western Washington University— After the Course was Restructured in 1981

		AIMS Mastery correct/ incorrect	AIMS Fluency correct/ incorrect
UNIT 1 VOCABULARY (SEE-SAY)			
Front of Flash Card (See)	**Back of Flash Card (Say)**		
an ignored day is	a day when data were collected but not charted	12/0	20/0
Pinpointing is	identifying and describing a movement cycle		
UNIT 2 PINPOINTING (SEE-SAY)			
Front of Flash Card (See)	**Back of Flash Card (Say)**		
Movement cycle is	the behavior to be counted	12/0	20/0
Movement cycles must have	observable movement; repeatable behavior; a beginning and an end		
UNIT 3 CHARTING (SEE-MARK)			
Students are given data to chart using all conventions.		25/0	35/0
UNIT 4 PROBES (SEE-SAY)			
Front of Flash Card (See)	**Back of Flash Card (Say)**		
A probe is	a sample of a behaver's performance on a standard task under standard conditions.	12/0	20/0
UNIT 5A READING CELERATION VALUES (SEE-SAY)			
Students are given a chart with celerations lines drawn and asked to read the value.		20/0	30/0
UNIT 5B DRAWING CELERATION LINES (SEE-MARK)			
Students are given 6 to 10 days data and asked to draw "quickie-split" celeration lines.		10/0	20/0
UNIT 6 LEARNING HIERARCHY (SEE-SAY)			
Front of Flash Card (See)	**Back of Flash Card (Say)**		
Fluency building usually begins when	the rate of correct responses passes 20/minute	12/0	20/0
UNIT 7A DECISIONS—WHEN TO CHANGE (SEE-SAY)			
Students are given charted data with 6 day celerations drawn and asked to decide whether to change.		12/0	20/0
UNIT 7B DECISIONS—WHAT TO CHANGE (SEE-SAY)			
Students are given charted data and asked to choose which type of intervention is most appropriate.		10/0	14/0
UNIT 8 PRINCIPLES OF REINFORCEMENT (SEE-SAY)			
Front of Flash Card (See)	**Back of Flash Card (Say)**		
Contingencies are often stated in _____ relationships.	when:then	12/0	20/0

for each probe were set by sampling a few competent precision teachers (N=5) on each probe. The aims are listed in Table 1. A mastery and a fluency aim were selected for each probe. Students were required to reach mastery on all units. Those desiring an A in the course were required to reach fluency as well. We are hoping to follow these students to determine if those who selected and reached fluency aims were more likely to maintain their Precision Teaching skills in the field than students who completed the course prior to the fluency requirement.

We hoped that the change in our procedures would make our topic more believable, and perhaps our lives easier. (How novel to have students test and correct each other) However, we did not feel entirely comfortable with abandoning the traditional class format, so we retained the midtern and final examinations as gross progress indicators, just in case.

The results were unexpected and delightful. Charts 1 and 2 show the beginning and ending frequencies for students in one class. Celerations were not used to evaluate performance, because, in most cases, students gained fluency in the units in just a few days. Lectures became easier, because students were fluent in terminology and basic Precision Teaching skills. Less class time was spent explaining and re-explaining introductory concepts. More time was available for practice in data decisions and application of Precision Teaching in other areas of curriculum.

Another reflection of the rapid acquisition of information by students was the change in the midterm scores. As Table 2 indicates, the midterm scores prior to the change in procedures had averaged 75.5 on a 100 point scale. The range of scores was 33-100. After we began to use PT to teach PT, the average score rose to 89.8 and the range narrowed (64-100). We had fewer students who were still "lost" at midterm.

We are pleased with the reorganization of this course. Considerable refinement still needs to be done. The probes have been altered some since the first drafts. We hope to have the probes printed and available soon to others who care to use them.

Some research topics have evolved as a result of the reorganization of this course. Presently we are looking at the graduates of our PT course and their utilization of PT in the field. Our research question is, "Do the students who graduated before the restructuring of the course use PT more or less frequently than those who learned PT to fluency by using PT?" More aim data for Precision Teaching skills also needs to be collected.

Table 2

Mean Student Scores on Mid-Term Examinations in the Precision Teaching Course at Western Washington University before and after the Course was Restructured in 1981

BEFORE THE COURSE WAS RESTRUCTURED

QUARTER	MEAN	RANGE
Spring 1980	71.8	44.4-97
Summer 1980	85.3	55-97
Fall 1980	71.4	33-100
Mean and total range	75.5	33-100

AFTER THE COURSE WAS RESTRUCTURED

QUARTER	MEAN	RANGE
Summer 1981	93.5	64-100
Fall 1981	87.4	69.4-96.8
Winter 1982	88.6	76-100
Mean and total range	89.8	64-100

1981-82

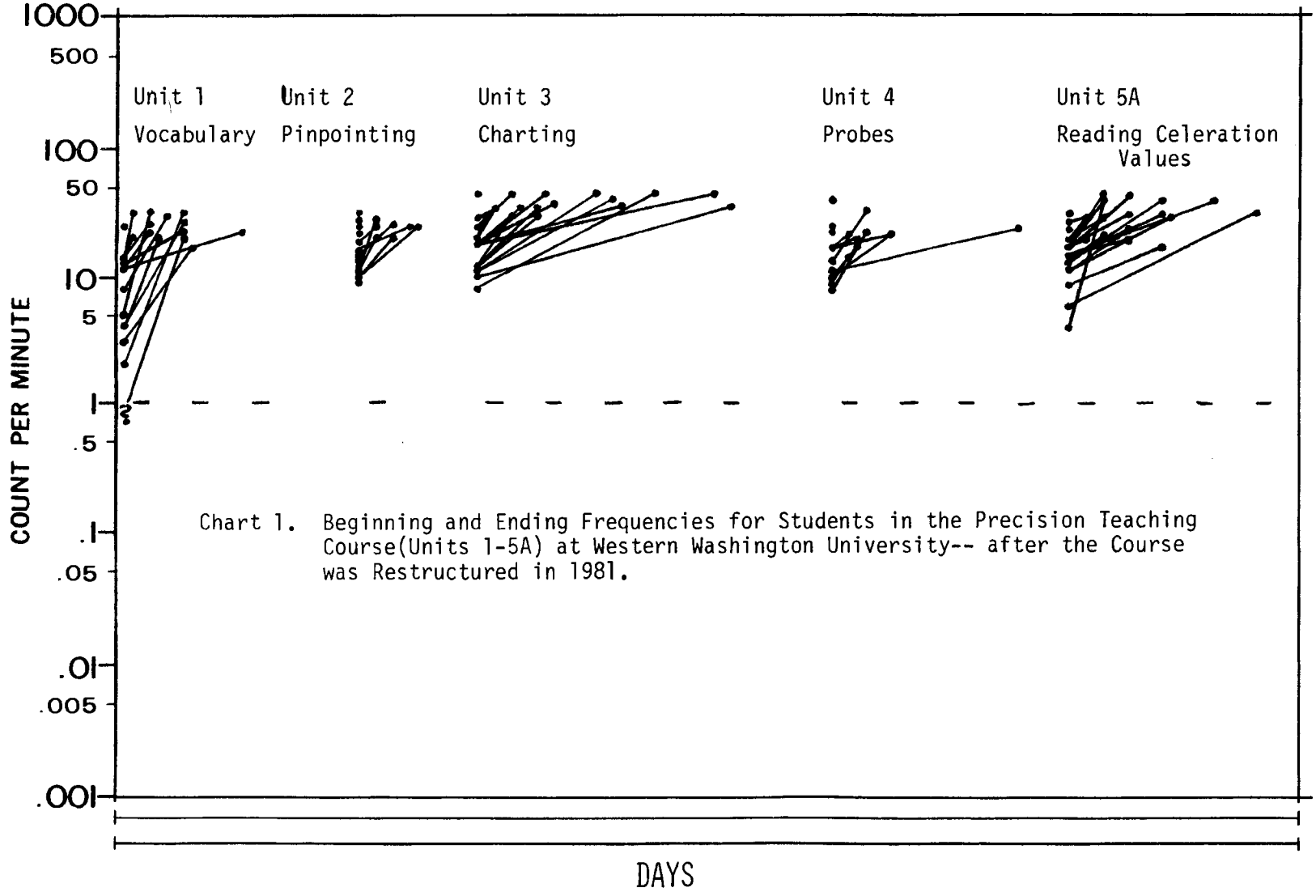

Chart 1. Beginning and Ending Frequencies for Students in the Precision Teaching Course(Units 1-5A) at Western Washington University-- after the Course was Restructured in 1981.

Eaton, Marie and Fox, Sheila. Using Precision Teaching to teach Precision Teaching. *Journal of Precision Teaching*, Volume III, Number 4, Winter, 1983.

Eaton/Fox

students in Precision Teaching course

see-say or see-mark

Western Washington University Bellingham, Washington

1981-82

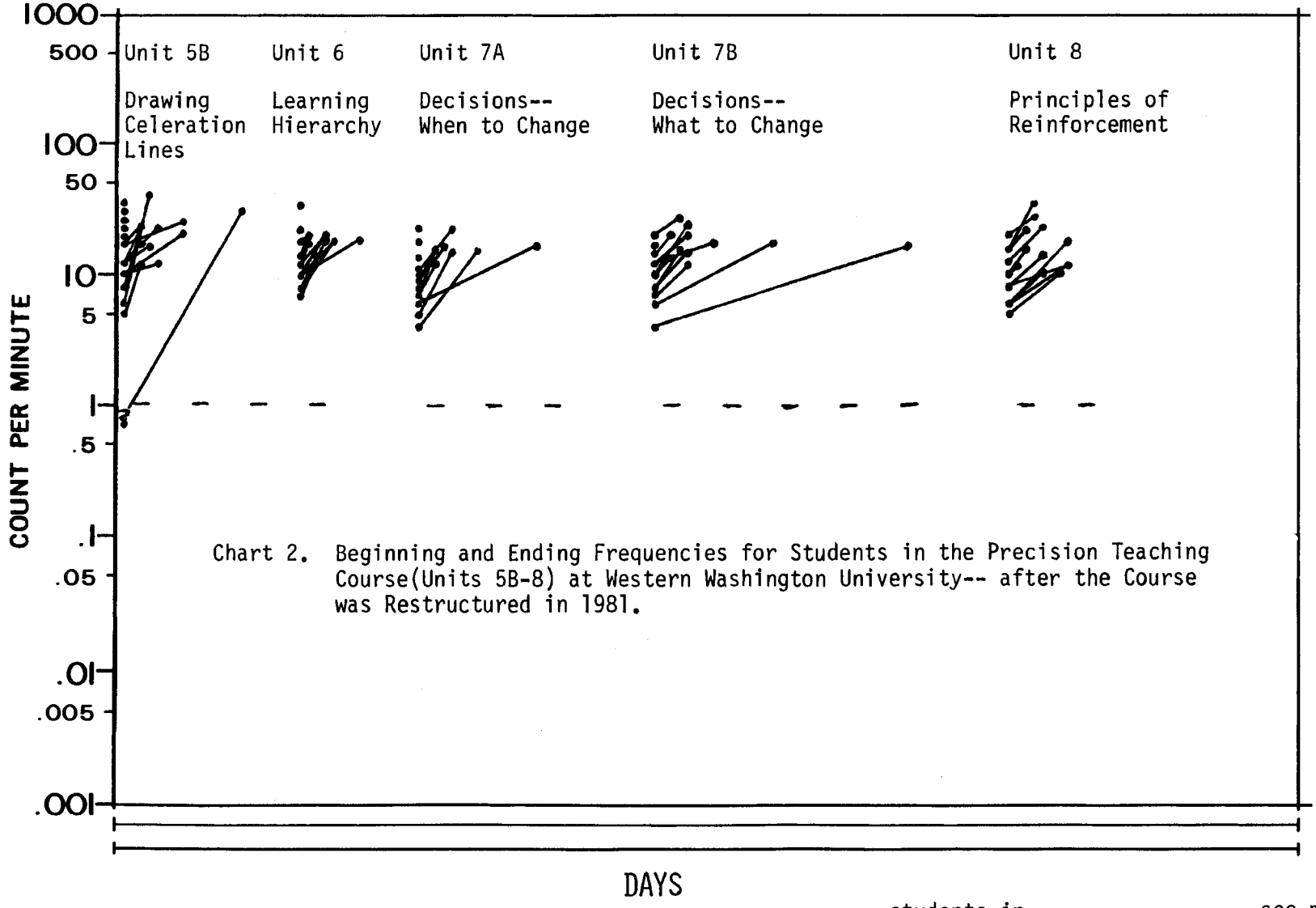

Chart 2. Beginning and Ending Frequencies for Students in the Precision Teaching Course(Units 5B-8) at Western Washington University-- after the Course was Restructured in 1981.

Eaton, Marie and Fox, Sheila. Using Precision Teaching to teach Precision Teaching. *Journal of Precision Teaching*, Volume III, Number 4, Winter, 1983.

Eaton/Fox

students in Precision Teaching course

see-mark or see-say

Western Washington University Bellingham, Washington

Even with these unanswered questions, we are happy about the results of these changes in the Precision Teaching course. We get less arguments about "how to do this stuff with 30 children"; there are typically 30 in the course. Teachers seldom say "this is fine for math facts, but how would you monitor more complex curriculum"; not one of them had suggested that learning Precision Teaching is simple. The timings are typically a time of excitement, and active learning. Try it, you'll like it.

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Chart-sharing

TRY and TRY AGAIN

Betty Dunn
Florida State University

This article discusses a project that was done as a class assignment at Florida State University. The project revealed that Precision Teaching can be a learning experience for both the student and the teacher.

The subject chosen for the project was an illiterate adult male who was being tutored at the F.S.U. Reading Clinic. Survival words such as danger, stop, open, warning, and wet paint were chosen to be taught because the client was having difficulties learning and remembering these words.

The client would see one of 20 survival words printed on a 3X5 index card and then say the word. A one minute timing was taken for 12 sessions and his correct and incorrect rates were charted on a Standard Behavior Chart. The words were taught by drill, modeling, and/or novel games immediately after the timing.

A phase change was introduced after six sessions. The words were reviewed **before** the one minute timing. Reviewing consisted of showing the word card and asking, "What does this say?" If the client answered correctly, the next card was shown. If the client answered incorrectly, he was asked, "What letter does this word begin with?" and "What sound does that letter make?" He was again asked to say the word. If he answered incorrectly the word was pronounced by the teacher and himself three times. Each word missed during review would be repeated until the client read it correctly.

A second phase change was implemented after nine sessions because the incorrect frequency was still high. This phase change involved reducing the number of words shown to the client. A stack of ten words was repeated for one minute. The client was also encouraged to say the words as fast as he could. Instruction at this time included a game that involved showing each word card for only two seconds. The word card was lifted from underneath the table to the top of the table edge, held there for two seconds, and then moved back underneath the table and out of sight. This phase change helped the client say the words instantly on sight rather than analyzing each letter in the word.

Before doing this project I knew that charting was very valuable but I didn't realize how important and helpful it could be to my teaching. Charting provides a learning picture. Instructional decisions can be based on this picture rather than on opinions. I seriously do not think that I would have made these two phase changes if I had not plotted the data on a Standard Behavior Chart.

I also realize that learning about charting is not the same thing as doing it. The more you chart the better you become at it. Charting makes you a better teacher each time you do it. So, keep on charting and try and try again.

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PHASE CHANGES LEAD TO SUCCESS

Melony Randolph
Florida State University

I started tutoring Tracey in reading several months ago at the F.S.U. Reading Clinic. His diagnostic data revealed that he had a significant weakness in comprehension. I also observed that he was exceptionally slow in oral and silent reading. I therefore began to remediate Tracey in comprehension skills and reading speed. I decided to remediate by using a precision measurement technique that would