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TEACHERS' THOUGHTS WHILE TEACHING:

THE SOUTH BAY STUDY, PART II

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## Abstract

This study of teacher decision-making behavior is part of the South Bay Study which investigated 10 San Francisco Bay Area elementary teachers' teaching styles, decision-making behavior, and concepts of students. The purpose was to generate paradigms for the study of how teachers think as they teach. Stimulated recall interviews were used in this portion of the study. Each teacher was videotaped six times at intervals over the year. The tapes were then played back to the teachers, who at various points were asked to describe what they believed they were thinking about at the time. These descriptions were analyzed and categories of concern emerged. The pattern of these categories of concern showed that while teachers make "fine tuning" adjustments in instruction within the recitation pattern of teaching, they do not make major alterations. Not once in an entire series of lessons was a teacher observed making a major change in teaching strategy. Instead, teachers continuously "read" pupil responses to learning tasks and made minor adjustments. In order of significance the concerns reported were: content of the lesson, procedures, time, and materials. Concern with pupil learning, attitudes, and behavior accounted for nearly 40% of the total, and concern with learning tasks, facts, and ideas for nearly 30%. Little concern over objectives was voiced. The concerns were relatively stable across time, and individual differences between teachers were relatively small. The overall pattern of concerns was consistent with the recitation method of teaching being employed. The teachers appeared to have generated a field of forces which brings concern with pupil response to learning tasks to the surface.

Teachers' Thoughts While Teaching:  
The South Bay Study, Part II

Kathleen McNair and Bruce Joyce<sup>1</sup>

As knowledge about teaching effectiveness has increased, so have expectations for teachers. They are asked to balance learning objectives, student characteristics, teaching skills and strategies, and curriculum materials in ways which will optimize teaching effectiveness. It is left to researchers to unravel the psychological process that binds these aspects of teaching together -- the process of teacher decision making (Clark & Joyce, Note 1).

Teachers make decisions that pertain to both immediate situations and the distant future. Short-term decisions include *preactive decisions*, those which take place shortly before instruction begins, and *interactive decisions*, those which occur during the instructional process. This distinction was introduced by Philip W. Jackson in "The Way Teaching Is" (Jackson, 1974) and allows examination of short-term decision making as it occurs in two somewhat different situations.

This paper presents the part of the South Bay Study concerned with interactive or "inflight" teacher decision making. This includes decisions about such immediate problems as who to call on, how to provide corrective feedback, when to discipline a student, or how fast to proceed through a lesson.

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Research literature on teachers' interactive decision making is sparse, and scientific knowledge about the kinds of information or cues that teachers use when making these decisions is almost non-existent. The recent investigations by Clark, Peterson, Marx, Joyce, and Morine-Dersheimer generated the antecedents of the methodology we used (see "An Introduction to the South Bay Study," which is included in this publication).

Marx and Peterson (Note 2) report findings from a controlled laboratory experiment in which both preactive and interactive decision making were examined. Since this was a pioneering effort, method and potential associations with other teacher and student variables were focused upon. Stimulated recall interviews were used to assess teachers' thinking during the lessons. To code the audio tapes of the interviews, the Teacher Decision Making Coding System was devised, but we found it was insufficiently sensitive to differences in teacher decision making. In light of the preliminary nature of this work, we declined to make generalizations concerning decision making or the relationships between these styles and teacher behavior or student outcome.

### Method

#### Subjects

As described in detail in the *Introduction*, 10 teachers participated in the study as informants about their thinking and decision-making processes. There was only one male teacher. There were nine white teachers, and one black teacher. All had taught for at least three years. The teachers are designated numerically. There were three first-grade teachers: 101, 102, and 103; two third-grade teachers: 104 and 105; one fourth-grade teacher: 106; two fifth-grade teachers: 107 and 108; and two special education teachers: 109 and 110.

### Design

This was a descriptive study. We hope any significant associations among the variables or differences between teachers will lead to future hypothesis building. To investigate the effect of time on teachers' interactive decision making, interviews were done in fall, winter, and spring. To focus on a major subject area, only reading lessons were observed. Because most of the teachers used a staggered reading system in which the less advanced students came earlier in the morning for reading, and the more advanced students stayed later in the afternoon, we were able to compare lessons for both groups. The data source was comprised of 60 interviews (2 lessons x 3 times during the year x 10 teachers).

### Procedure

The method used throughout the investigation consisted of stimulated recall interviews between an investigator and a teacher, using a videotape of a lesson the teacher had just taught.

On a day previously arranged, the investigator videotaped both the morning and afternoon reading lessons. If three investigators participated, as many as three teachers could be videotaped in one day. All 10 teachers were videotaped as close to the same time as possible. As soon as school adjourned, an audio tape recorder, a videotape recorder and playback unit, and a monitor were moved into the teacher's classroom, and the stimulated recall interview began.

The teacher sat in front of the monitor while the interviewer sat to the teacher's side, next to the playback unit. The audio tape recorder was used to record the interview.

The teacher was instructed to stop the tape whenever s/he remembered hesitating, assessing the situation, or making a decision. In addition, the interviewer stopped the tape at four points for each lesson: (1) the first time a pupil gave an incorrect answer to a teacher question, (2) the second or third time the teacher shifted the activity in which the pupils were engaged, and (3) and (4) at two randomly selected points. After the tape was stopped, the interviewer asked the following questions:

1. What were you thinking at that point?
2. What did you notice that made you sort of stop and think? (If necessary, add: Was there anything pupils were doing that made you sort of stop and think?)
3. What did you decide to do?
4. Was there anything else you thought of doing at that point, but decided against?
5. What was it?

The same probes were used for stops initiated by both the teacher and the interviewer. The videotape was stopped at two random points, and the interviewer ascertained whether or not a decision was being made. Then, the tape was rewound and played from the beginning and investigators and teachers stopped the tapes whenever they believed a decision was taking place.

### Coding

The protocols were coded using a category system we devised after participating in and reviewing several interviews. It consists of five major categories of teacher concern, each of which is broken down into more specific subcategories (see Appendix). One coding sheet was used for each interview.

We found that when the teacher stopped the videotape, s/he was as likely to describe his or her thinking as to discuss a clear-cut decision-making event. We decided to code these thought processes as well as the instances in which the teachers actually engaged in decision-making

behavior. Thus the focus of the study changed slightly. Rather than concentrating purely on teachers' interactive decision-making behavior, we also examined their interactive information-processing strategies and thinking patterns. The data more adequately answered the question: What are teachers thinking about as they teach?

Whether commenting on the ongoing activity or remarking on an actual decision, it was the concerns<sup>2</sup> addressed as the teachers explained their reason for stopping the tape that were coded.

The five major categories of teacher's concern are pupil, lesson content, procedures, time, and materials. Descriptions of the more specific subcategories are presented in the Appendix.

### Results

Sixty coding sheets representing 60 interviews were used in the analysis of the data. An interview was considered the unit of analysis. (The interviews were conducted to simulate a 10 x 2 x 3 repeated measures design.) Factors under investigation were the teacher, student ability (higher and lower), and time (fall, winter, and spring).

Through the use of tallies, the total number of times a particular type of concern was mentioned during an interview was recorded on the coding sheet, as was the teacher ID number, the date, and students' ability level as measured by a combination of tests and teacher judgments. If a teacher mentioned more than one type of concern during a stop, each type mentioned received a tally. Thus, the number of concerns recorded for an entire interview may not necessarily equal the number of stops made.

### Productivity

First, we examine the volume of the data. A total of 1,249 concerns

<sup>2</sup>In this paper, "concern" refers to an aspect of the lesson that a teacher found remarkable or wanted to affect by his/her decision.



were coded from the 60 interviews, which indicated an average of between 20 and 21 concerns mentioned per interview. The average number of concerns mentioned by a teacher after the series of six interviews was very close to 125, while the standard deviation was about 41. The average number of concerns for a particular set of lessons was close to 208, also with a standard deviation of approximately 41.

#### Types of Concerns and Relative Weights

We examined how the 1,249 concerns mentioned were distributed among the categories. Table 1 lists each category and the number of times it was mentioned.

The teachers were most affected by their concern for the pupil and based many of their decisions on what they surmised was happening with the individual student. Content accounted for the bulk of the remaining concerns voiced. Teachers apparently focused much of their attention on what was occurring during the lesson, i.e., what the students were hearing, saying, doing, and feeling. The other major areas of concern did not receive nearly as much overall attention.

Pupil learning was most frequently on the minds of these 10 teachers. They were concerned that the student master what was before him or her. Not surprisingly, then, the task is the second most popular concern. These teachers closely monitored the various aspects of tasks to ensure appropriateness. Third, the teachers were concerned with the facts and ideas embedded in, or relevant to, the lessons and their appropriateness. And, following that, the teachers focused their concern on pupil attitudes in an effort to bring about positive feelings toward the learning situation. The ranking of the remaining categories is obvious from Table 1.

Table 1: Total Number of Concerns Mentioned per Category

Category	Number of Concerns Mentioned	
Pupil	490	
learning		291
attitudes		128
behavior		70
Content	395	
task		188
facts and ideas		170
objectives		37
Procedures	172	
directions		87
modifications		55
scheduling		30
Materials	110	
instructional systems		76
teacher-developed aids		34
Time	83	
time block restrictions		38
pacing		28
time-related goals		17
Total	1249	

### Effect of Time

One question of interest is the effect of time on the volume and distribution of concerns among the categories. The total number of concerns mentioned for a particular part of the year was broken down by teacher. Most teachers made more comments in fall than in winter, and (except for Teacher 109, a special education teacher) more comments in spring than winter (33% of the total number of concerns were voiced in the fall, 28% in the winter, and 39% in the spring). It appears that increasing familiarity with the process did not induce a steady increase in productivity.

After standardizing the data by changing the number of times a particular concern was mentioned to a proportion of the total number of concerns mentioned during the interview, we were able to examine the stability of concerns over time. We conducted a one-way analysis of variance and used Hartley's  $F_{\max}$  test to test for homogeneity of variance. Our results indicated that frequency of mention of a particular concern did not change over time. Spearman rank order correlations were computed for the position of each category in terms of frequency of mention by all teachers. The results confirmed the stability of emphasis placed on each category by the South Bay teachers over time.

### Individual Differences

Differences between teachers with respect to the distribution of concerns among the categories were examined. A one-way analysis of variance was performed for each category, and F-ratios were determined, to identify the differences. The Newman Keuls technique was used to find out which teachers mentioned a particular concern significantly more or less often than the other teachers. In addition, Spearman rank order

correlations were computed for each teacher with every other teacher, using frequency of mention per category as the ranking criterion.

Teacher 108 (fifth-grade) was significantly less concerned with pupil learning than were Teachers 109, 110, 101, and 102 (two special education, and two first-grade teachers, respectively). On the other hand, Teacher 102 was significantly more concerned with pupil learning than were Teachers 108, 107 (special education), 103 (first grade), 104 and 105 (third grade), and 106 (fourth grade). In regard to concepts, Teacher 110 had a significantly higher mean -- showing greater concern -- than did Teachers 108 and 101. Teacher 101 expressed less concern with directions compared to Teachers 105 and 108, who expressed the most concern. Regarding modifications, Teacher 107 was less concerned than were Teachers 105 and 106. For the category of pacing, no significant differences were indicated. With regard to time-related goals, Teacher 107 was significantly more concerned with instructional systems, than were Teachers 108, 110, and 103. Teacher 108 expressed significantly more concern about teacher-developed aids than did Teachers 106 and 104.

Apparently, most of the teachers shared common concerns and attributed the same priorities to them. The teachers did not differ a great deal between themselves with respect to what they attended to as their lessons proceeded. They appeared to be working out of a standard framework that emphasized learning rather than thinking, task-directedness, and teacher dependency.

Those teachers who deviated from the central tendency did so because they concentrated on one aspect within the standard framework to the exclusion of most of the others. For example, because Teacher 105 (third grade) was focusing on adjusting the learning environment to the students, goals and long-range plans were not attended to. Because Teacher 108

(fifth grade) was mostly concerned with management, student learning and variations in class routines were of low priority. Because Teacher 101 (first grade) was mostly concerned with the individual needs and progress of each student, management and group concerns declined in importance. Despite some apparent deviation, however, these teachers appeared to be more alike than different with respect to what concerns them during a lesson.

#### Ability Level of Students

We examined the effect student ability level had on teachers' interactive decision-making patterns. There was a tendency toward mentioning more concerns during lessons with less-advanced reading groups than with more-advanced reading groups. We found a similar tendency for four out of the six teachers who divided their reading groups by ability.

Differences by category between reading lessons with higher and lower ability students were investigated using the seven most frequently cited categories. Only interviews with those teachers who regarded their afternoon groups as more able readers were used in this analysis. Those interviews with teachers watching themselves teach the morning group comprised the lower group; those interviews with teachers watching themselves teach their afternoon group comprised the higher group. There were 18 interviews in each group. The means for each group for each category were calculated.

Although none of the means differed significantly, it appeared that these six teachers tended to be more concerned with pupil behavior, effectiveness of directions, appropriateness of concepts, and pupil attitudes when teaching their lower groups. When teaching higher ability students, these teachers appeared to be slightly more concerned

with the appropriateness of the task and with pupil learning. Concern with instructional systems did not differ for either group.

Teachers showed more individuality here than we have noticed previously. In all but two categories, directions and pupil behavior, we found differences that favored both groups. It appeared that these teachers as a whole may not have seen these groups of children exactly the same. But of equal interest is the notion that these teachers, who appeared to be so alike in so many ways, differed in what they were sensitive to given a specific ability group. For example, Teacher 107 (fifth grade) was not nearly as concerned with pupil learning in the high reading ability group as she was in the lower group. Teacher 106 (fourth grade) was twice as concerned with pupil learning in the slower group. The pattern, however, was reversed with respect to pupil attitudes. Teacher 107 was far more concerned about attitudes among her slower pupils than among her higher group, while Teacher 106 was more concerned about attitudes in her higher group. Other teachers showed similar individual patterns. Teacher 108 (fifth grade), for instance, differentiated between ability groups with respect to four categories, but in only one of these, concepts, did she exhibit more concerns when working with her higher ability group. Grade level could contribute significantly to teacher differences and would certainly need to be taken into account in further investigations.

#### Discussion

A specific question like "How often did these teachers make decisions during 20 minutes of teaching?" is difficult to answer using our data. We could not assume that the teachers recalled or interrupted for every decision they made. However, we were able to determine productivity (the number of concerns teachers were able to discuss

during the interview) and compare teachers on that dimension. The South Bay teachers were dissimilar in terms of productivity. Some were aware of, and may, in fact, have made many more decisions about immediate concerns than others.

Why such a difference exists deserves some theoretical consideration. Some teachers may be more shy in an interview situation; some may not know how to discuss their interactive decisions; some teachers may have established such a routine that interactive decisions do not occur very often.

The kinds of things the teachers noticed and/or made decisions about tended to be global, adhering closely to the traditional recitation model of teaching. The range of concerns spread across several aspects of teaching, but the bulk of the concerns were concentrated on the pupil and the task at hand. The teachers seemed to be using some sort of reference model against which they checked the ongoing activity. The teachers payed close attention to what went on, but their reference model did not seem to be a complex one; very rarely was a particular teaching theory mentioned. Learning other than factual mastery (for instance, transfer, discovery techniques, application) was seldom mentioned. Reading may not be an area which readily fits a more complex reference model, or perhaps teachers may not feel a need for a more complex reference model.

The 10 teachers tended to be more alike than different with respect to what they noticed and made decisions about. There was very little individual variation. This may be an artifact of holding the subject matter to reading, or it may be the result of a more universal adherence to a certain type of teaching. It may also be that the categories are

too general to discriminate between these teachers and that variation would occur at a more specific level.

Productivity did not vary systematically with time of year, but eight of the 10 teachers were equally or more productive in the spring than in the fall. It is possible the teachers were actually making more interactive decisions in the spring as a result of less preactive planning, more familiarity with students, more student input, or other factors. Or, it is possible teachers were more aware of themselves making interactive decisions. Also, they might simply have been more used to the interview process and less inhibited about speaking out. Being least productive in the middle of the school year is more difficult to explain and may be an artifact of the South Bay Study.

Time appeared to have no effect on the emphasis given to each category in relation to the other categories; teachers were concerned about the same things to about the same degree throughout the year.

Pupil ability appeared to have little effect on productivity or category emphasis. The bulk of teacher concerns fell within the same seven categories for each group. How they fell differed by group for some teachers, but the differences were not always in the same direction. This may indicate some individual variation with regard to implementation of the universal reference model, if such a model exists. How and why perceived ability level might affect interactive decision making deserves further research.



Reference Notes

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  2. Marx, R.W., & Peterson, P.L. The nature of teacher decision making. Paper presented to the American Educational Research Association, Washington, D.C., 1975.
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AppendixCategories of Teacher ConcernPupil

Pupil learning. This encompasses teacher concern with a group of students or an individual student's acquisition of factual information, concepts, or theories being presented in the lesson. The concern could arise out of a general tendency for the student to be a slow or a fast learner, or it could come from a more immediate response to the particular lesson. For example, one teacher commented, "I knew she had it so I decided not to discuss it any further." Another teacher remarked, "He has a lot of trouble with his sounds, so though he seemed to have the idea, I decided to drill a little more."

Pupil attitudes. This includes those areas of concern that touch upon the more affective aspects of student response. These kinds of concerns can be with a student's tendency to maintain a particular attitude or with an immediate exhibition of a specific attitude. One teacher commented, "This little girl is shy and very sensitive. That's why I decided to call on other students after she gave me that answer, to make less of the fact that she didn't have it right." Several teachers mentioned the following: "He wasn't paying attention so I decided to call on him."

Pupil behavior. This refers to concerns that center upon how a student acts in the classroom. These concerns could be founded on a student's reputation for behaving or misbehaving, or they could result from the immediate situation. For instance, one teacher noted, "He is likely to

poke and bother the person next to him, so I decided to put him next to me." Or, as another teacher explained, "They were more excitable than usual today, so I tried not to let them get away with anything."

### Lesson Content

Task. This addresses those concerns that relate to the learning activity in which the students are engaged. It includes such statements as "I at first wanted them to write their own stories, then changed my mind and had them write a group story."

Concepts. This includes those instances when a teacher focuses on a concept she wants the children to obtain from the lesson. A typical example of this type of concern would be the statement, "That's a difficult idea for kids this age, so I decided to take a little longer with it."

Objectives. This refers to concerns with the mastery of the knowledge and skills developed in the lesson. The comment, "I hadn't thought about it, but one of the things I wanted them to be able to do was rely on themselves. So instead of spelling a word for them, I had them look it up themselves." is representative of this category.

### Procedures

Directions. This includes concerns that pertain to what the students are supposed to do to accomplish the task set forth in the lesson. They may be as simple as, "Read pages 100-110 in your reader," or as complex as an explanation of how to do a crossword puzzle. A teacher exhibiting this concern might say, "When I gave the directions, they weren't clear, so I decided to do the first one as an example."

Scheduling. This refers to those concerns that pertain to the order in which things happen during a lesson. A lesson may include more than one activity (e.g., individual seat work followed by a group reading session), or an activity may have several parts (e.g., a vocabulary review, a question and answer review of the study, and board work). A concern during the lesson with the order in which these occur would fall into this category. For example, one teacher commented, "Instead of discussing the story and then doing a vocabulary lesson on the board, today I decided to do it the other way around."

Modifications. This encompasses those concerns that pertain to specific deviations from the normal routine. Normal (or usual) is the key word here. A concern of this nature would be, "Usually, I have the children take turns and answer individually, but I decided to see what would happen if I let them answer as a group."

#### Time

Pacing. This refers to those concerns which relate to the speed at which material is being presented, the flow of teacher questions and student responses, the amount of "wait time" allowed, and the amount of time students are disengaged from tasks. An example of this type of concern is the following comment, "I gave them the answer myself because I felt things were moving too slowly. I was losing their attention."

Time-block restriction. Included here are those concerns that focus on accomplishing a certain amount by the end of the period in which the lesson is taking place. For instance, "I wanted to finish the story by the end of the lesson, so I asked fewer questions between sections."

Time-related goals. This refers to those concerns having to do with long-range expectations for things like the amount of material presented, the number of assignments completed, and the number of pages done in a workbook. An example of this sort of concern is, "I skipped enrichment work today, and we worked in their workbook so it'd be done by winter vacation."

### Materials

Instructional systems. This addresses concerns that relate to the various approaches to instruction involving standard textbooks, workbooks, charts, flash cards, and other teaching materials packaged and marketed on a wide scale. For instance, such a concern is, "It's important that we work on the correct chart, so I decided to go to my desk and check it."

Teacher-developed aids. This includes those concerns that focus on materials the teacher had made, purchased, or altered to enhance a lesson: Things such as a vocabulary game created by the teacher, special flash cards tailored to each individual student's needs, special dittoed worksheets. As an example, one teacher commented, "I hoped that the children would like the game, but I decided it was too distracting so I put it away."