

USING THE CASE METHOD IN TEACHER EDUCATION: THE ROLE OF DISCUSSION AND EXPERIENCE IN TEACHERS' THINKING ABOUT CASES

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Abstract:

The question of whether *discussion* is a crucial variable in teachers' learning from cases has not been tested empirically. This study investigated what teachers understood from just reading and writing about a case, compared to what they thought when also discussing it. The quality, form, and content of the thinking of 8 student teachers, 8 beginning teachers, and 8 experienced teachers was examined. Quantitative and qualitative analyses of participants' writing and oral discourse from the case discussions were undertaken. The work of Piaget and Vygotsky provide the theoretical basis for interpreting how discussion affected teachers' thinking about cases.

Article:

During the past few years there has been renewed interest in developing and using cases for teacher education (Carter, 1989; Florio-Ruane & Clark, 1990; Kleinfeld, 1988, 1990, 1991, 1992; Kowalski, Weaver, & Henson, 1990; LaBoskey, 1992; Merseth, 1991a, 1991b; Richert, 1987, 1990, 1992; Richardson, 1991; L. Shulman, 1992; J. Shulman & Colbert, 1988, 1989; J. Shulman & Mesa-Bains, 1992; Silverman, Welty, & Lyons, 1992), and numerous claims about the benefits of the case method for teacher education have been posited. For example, several educators have argued that case methods are useful for promoting critical reflection, better understanding of theory, and for producing teachers who will be problem solvers and critical thinkers (Greenwood & Parkay, 1989; Kowalski et al., 1990; J. Shulman, 1992). Some educational researchers are interested in developing a case literature that will capture teachers' craft knowledge, and potentially serve as part of the knowledge base for teacher education. Others are interested in cases as a pedagogical tool for preservice teacher education and inservice professional development. However, the community of scholars interested in case-based teaching has only recently begun to discuss a research agenda (e.g., Merseth, 1991a; L. Shulman, 1992; Sykes & Bird, 1992) for studying case methods.

Although the definition and the goals of *case methods* in teacher education are still evolving, the following definitions will apply here. *Cases* are richly detailed, contextualised, narrative accounts of teaching and learning. Cases should be sufficiently substantive and complex to allow for multiple levels of analysis and interpretation. Cases represent the problems, dilemmas, and complexity of teaching something to someone in some context. *Case method* is the practice of using cases as a pedagogical tool in fields such as law, business, medicine, and education. *Case-based teaching* is a method of instruction that focuses on the use of cases as either a part of or the central focus of the curriculum.

A basic question that has not been addressed concerning the use of the case method in education is whether the *discussion* of a case contributes to teachers' thinking. L. Shulman (1992) contends that the power of some cases rests in the content of the case, and not in whether it is lectured about, discussed, or simply read. However, others argue that the key to the case method is in the discussion process itself (Christensen, 1987; Merseth, 1991b; Richardson, 1991; Welty, 1989). Furthermore, although cases are used in both preservice and inservice settings, there has been little empirical work to date that describes either how teachers with different amounts of

experience think about cases or how groups of teachers interact and influence each other during a case discussion. Given growing interest in the use of case methods the role of discussion and experience are important to investigate.

This paper addresses the question of what teachers with different amounts of experience in teaching learn from just reading and writing about a case of teaching writing in a fourth grade classroom, compared to reading, writing, *and* discussing it. Both quantitative and qualitative analyses of the discourse of 24 teachers who participated in this study are presented. The quality, form, and content of the thinking of student teachers, beginning teachers, and experienced teachers about a case are discussed. Excerpts from the written analyses of several teachers are presented to highlight their thinking about the case and how discussion of it affected their thinking.

Background

L. Shulman (1986, 1992) has written about how and why the case-based approach should work in teacher education. He suggests that cases can be used to teach educators about principles or concepts of a theoretical nature, precedents of practice, morals and ethics, and strategies, dispositions and habits of the mind (e.g., thinking like a teacher). Among other things, Shulman also suggests that cases can provide visions or images of the possible, and increase motivation for learning. All of these possibilities, however, have yet to be scrutinized empirically.

Fortunately, however, L. Shulman (1992) also explicated why recent ideas from cognitive psychology can help us understand the potential value of cases and case-based teaching methods, even though we know little about how case-based teaching works. For example, the work in cognitive psychology by Spiro and his colleagues (Spiro, Visoel, Schmiyz, Samarapungavan, & Boerger, 1987; Spiro, Coulson, Feltovich, & Anderson, 1989) on learning in ill-structured domains, of which teaching is one, suggests that case-based teaching might help prospective teachers cope with the complexity of domains that surround teaching and learning in schools. Furthermore, since teaching cases are by their nature contextualised and situated (or should be, if they are "good" cases), then case-based learning also takes into account the importance of recent research in cognitive psychology about the "situated" nature of knowledge and thinking (Brown, Collins, & Duguid, 1989; Lave, 1988; Resnick, 1987). In addition, the narrative quality of cases also suggests that they may be valuable tools for teacher education because they provide and connect both paradigmatic and narrative ways of knowing, which are two kinds of knowledge valued in teaching (Bruner, 1986, 1992; Carter, 1993; Doyle, 1990).

While cognitive psychology offers much to help us understand why case-based teaching methods should help teachers learn, I would submit that consideration of theories in developmental and social psychology, of how knowledge is constructed both individually and socially, need to be added. The theoretical rationale for this study stems from such constructivist perspectives as Piaget (1932), and Vygotsky (1978). Their theories consider the role of the group and social interactions in the development of children's thinking in cognitive, moral, and social domains. Their work offers evidence that social interactions among peers promote learning and development. Although important differences exist between the theoretical positions of Piaget and Vygotsky, their theories provide a rationale for why the discussion of a case is an important factor to consider in studying teachers' thinking.

Piaget (1932) claimed that peer interactions can foster development because they often pose critical cognitive conflicts which may serve as a catalyst for change. He asserted that peer interaction acts like a trigger for change rather than as the substance of change because such interactions lead children to reflect individually on conflicting notions or ideas that arise in the interaction. According to Piaget, equilibration is a process by which a child notices a conflict and resolves it through construction of some other new dimension or structure that links to an existing system (scheme), which then makes the new relationship a logical necessity. Similar conflicts can occur for adults, including preservice and inservice teachers, when they are learning new things individually or in groups (Hutcheson & Ammon, 1987; Levine, 1992; Schneider & Ammon, 1992). This suggests that discussion of cases is potentially a valuable tool for the development and learning of teachers as

well as children. The social interaction during the discussion of a case among a group of teachers has the potential for providing cognitive conflict, hence to trigger change.

Vygotsky claimed that peer interactions not only initiate change, but shape the nature of the change as well (1978). He stated that children benefit from social interactions because they internalize the cognitive processes that are implicit in the interactions and communications with others, including adults or more competent peers. Vygotsky also asserted that all higher mental functions such as voluntary attention, logical memory, and conceptualization originate first in the social plane (social relationships, group interactions) and then in the intrapsychological plane (internally, within the individual). Therefore, social relations among people underlie all higher mental functions.

For Vygotsky what is learned in the social interaction of the group is prerequisite to cognitive development. From this perspective, the social interactions and the content of the group discussion are crucial to what is learned from cases. Theoretically, this would manifest itself in differences in understanding the issues in cases between those who do and do not participate in case discussions. In addition, according to Vygotsky's notions about the Zone of Proximal Development, teachers with more experience should influence the thinking of other teachers with less experience who interact with them in the case discussions. Therefore, studying the direction and the nature of the influences among the participants in the case discussions was of interest in this study.

These theoretical perspectives from developmental and social psychology provide a basis for helping us think about how knowledge is constructed both individually and socially. The questions of how the thinking of teachers with different levels of experience is influenced by the use of cases, and how their thinking differs when teachers analyze cases with and without discussing them, led to this research.

The few empirical studies that have been reported in the literature on case-based teaching methods have dealt mainly with preservice student populations, and have yielded mixed results with regard to the effectiveness of case methods. Some of the available research on case methods is based on teachers' written analyses of cases, and discussion was not directly a factor in these analyses (e.g., Harrington, 1993; Lundeberg & Fawver, 1993). Other studies that did involve discussion did not have a comparison group (e.g., Noordhoff & Kleinfeld, 1991; Richardson, 1991). Where controls were used (James, 1990; Stoiber, 1991) a comparison was made between two instructional methods: traditional, didactic methods versus case-based discussion methods. Because of concerns about confounding, and the potential for the case method to produce novelty effects (Clark, 1985), other research designs and methodologies are needed to study the effectiveness of using cases in teacher education. In this study, quantitative analyses of teachers' writing about cases were undertaken in a pretest/posttest research design, and qualitative methods were employed to analyze the discourse from participants' writing, and from transcriptions of the case discussions.

Method

Participants

Twenty-four elementary grade teachers, current students and graduates of the Developmental Teacher Education (DTE) program at the University of California—Berkeley, participated in this study. This 2-year, post-baccalaureate teacher preparation program leads to an elementary teaching credential and a Master of Arts degree with an emphasis on child development (Black & Ammon, 1992). Twenty-one participants were female, and three were male. Sixteen teachers were Caucasian, and eight female participants from various other ethnic groups were more or less evenly distributed across conditions and levels of experience, although this was not preplanned. One-third of the participants were student teachers, one-third beginning teachers in their first or second year of teaching, and one-third were experienced teachers with at least 6 years of teaching experience. All participants were paid volunteers, solicited by phone or contacted in person.

Case Materials

Two cases about teaching writing in fourth grade classrooms constituted the materials for this study: the case of Nan Miller and the case of Julianne Bloom (Silverman et al., 1992). Each case described a writing lesson

conducted by fourth grade teachers from the same school district. Besides having a similar context, these two cases had the following major issues in common: (1) a mismatch between teacher's goals and objectives and the activities in the lesson, (2) lack of modeling, (3) problems with classroom management and student relations, (4) differential expectations for students, and (5) developmentally inappropriate tasks. Independent assessment by experts in case writing validated the parallel nature of these cases with regard to these topics. Pilot data were also collected to validate the efficacy, face validity, and parallel content of these cases.

Table 1

Design of the Study: Comparing Writing Only with Writing and Discussion of Two Cases

Group (N)	I Write:	II Discuss:	III Write:	IV Write:
Experimental (12) (4 each ST, BT, ET)	NM1	NM	NM2	JB
Control (12) (4 each ST, BT, ET)	NM1	—	NM2	JB

Design of the Study

Participants were divided into two equal-sized groups: 12 teachers participated in the experimental condition and 12 in the control condition (see Table 1). Each group contained equal numbers of student (ST), beginning (BT), and experienced teachers (ET). The experimental group read and wrote an analysis of the Nan Miller case (NM 1), and then discussed the case within 2 days of their initial writing. The control group teachers read and wrote about the same case, but did not participate in any discussion. Both groups wrote a second analysis of the same case (NM2) a few days after their original analysis and without looking back at their first analysis. Both groups also wrote an analysis of another case, the case of Julianne Bloom (JB), one month later. There was no discussion of this case by either group. Analysis of participants' written case analyses focused on any changes in thinking prompted by the discussion to see if these were temporary, or if they were retained over a period of time. The same writing prompts and directions were supplied to all participants, and the same time-frame was used.

The experimental group was further divided into two equal-sized groups of six, so that groups would be small enough to encourage everyone to participate. Each discussion group was comprised of two student teachers, two beginning teachers, and two experienced teachers so that the interactions and influences among teachers with different levels of experience could be analyzed. The case discussions were video and audiotaped and transcribed according to the method of Gumperz and Berenz (1990) for transcribing conversational exchanges, such as group discussions.

Procedures for Analyzing Written Discourse

A holistic scoring rubric was devised to analyze the quality, completeness, and elaboration of responses to seven questions that participants were asked to consider in responding to the cases: (1) What is going on in this case? Summarize aspects of the case that you think are important to understanding it. (2) What are some of the issues that come up for you in this case? What are some questions this case raises for you? (3) Why do you think it is important to raise the questions, concerns, or issues you wrote about in question No. 2? (4) What are some other ways to teach this lesson? (5) How would *you* teach this lesson? What materials would you use? What order would you do things in? What examples would you give? (6) How would you answer the teacher's questions posed at the end of this case? and (7) What else do you need or want to know about this case?

The purpose of using a holistic scoring system was to provide a method of quantifying teachers' thinking about the cases. A scoring range from 1 to 4 was established to represent less to more adequate understanding of the content and the complexities of the cases. Higher scores indicated answers that showed discrimination, differentiation, integration, interpersonal maturity, independence of ideas, creativity, flexibility, consideration of more alternatives, and tolerance for ambiguity. Conversely, lower scores were reflected in answers that showed less flexibility, fewer solutions, intolerance, rigidity, stereotypes, quick judgments, and desire for correct answers or truths. An average score based on responses to each of the questions listed above was computed for each written analysis and used in quantitative analyses of these data.

Initial evaluation of the validity of this scoring scheme was undertaken using data from the pilot study for this project, and revisions were based on these data. The assumption was made that if the more experienced teachers in this study scored consistently higher than the less experienced teachers, and if the scores of the experimental group were different (preferably higher) than those in the control group following the discussion, then this would indicate that the scale had some validity with regard to teachers' relative level of understanding of the cases. Since all participants in this study had sufficiently high Graduate Record Exam (GRE) scores to be admitted to graduate school at UC—Berkeley, it was also assumed that higher or lower scores on this scale would not reflect only verbal and writing ability but would reflect the relative complexity of each participants' thinking about teaching and learning. Furthermore, although years of teaching experience may not necessarily reflect expertise in teaching, all of the experienced teachers in this study were considered to be effective enough by their respective school districts to serve as mentors for student teachers. So, for the purposes of distinguishing the three groups in this study, years of experience in teaching was considered to correlate with expertise in teaching.

Procedures for Analyzing Case Discussion Discourse

In addition to having three written analyses of two cases from each participant, data for this study also included a discourse analysis of two small-group discussions of the Nan Miller case. Analysis of these case discussions was based on notions from Sacks, Schegloff, and Jefferson (1974) on turn-taking, and from Labov and Fanshel (1977) on propositions and expansion in analysis of discourse. Each participants' role in the discussion and their interactions with others were studied and included in individual profiles developed for each teacher (Levin, 1993).

Both qualitative and quantitative analyses were applied to participants' written analyses of the cases in order to provide a comprehensive picture of these data. Descriptive statistics and results of quantitative analyses are presented next, with the results of the qualitative analyses of the writing data to follow. Results of the discourse analysis of the case discussion will also be presented.

Results

Quantitative Analyses of the Writing Data

The dependent variable in these analyses was the mean score for a participant's written case analysis. There were three written case analyses, hence three scores for each of the 24 teachers. The two independent variables of interest were: (1) experience levels of the teachers in the study, either ST, BT, or ET; and (2) the group they were in, either experimental or control. The means and standard deviations for the holistic measure of participant's overall quality of response to each of the writing tasks (NM1, NM2, and JB) are presented in Table 2. Comparisons of means were conducted using analysis of variance (ANOVA), followed by additional post hoc contrasts.

The ANOVA for participants' holistic ratings on their written analysis of NM1 was significant for level of experience, $F(2, 24) = 6.18, p < .01$. Post hoc contrasts showed that experienced teachers scored significantly higher on their first written analysis of the Nan Miller case than both beginning teachers ($t(7) = -2.45, p < .01$) and student teachers ($t(7) = -3.55, p < .005$). It was not clear that beginning and student teachers were different from each other ($t(7) = -1.71, p < .1$), although there were qualitative differences underlying these numbers, which will be discussed later. No difference was found between the experimental and control groups' scores on NM1, and there was no interaction between experience and experimental condition.

The ANOVA performed on the scores from the second analysis of the Nan Miller case showed an effect of group, $F(1, 23) = 7.52, p < .05$, but not for level of experience, indicating a significant difference in the scores between those who did participate in the discussion and those who did not. However, a look at the means in Table 2 for NM2 shows that while the scores of the experimental group are higher than those in the control group, there was no significant increase in scores by participants in the experimental group from NM1 to NM2 as would be expected. Perhaps writing about the same case a second time using the same question prompts was not motivating for some teachers, or perhaps some participants did not spend as much time on the second

analysis as the first, even though the same set of instructions regarding the first analysis was given for the second analysis. However, since all the teachers in the experimental group wrote lengthy second responses compared to those of the control group (5-6 pages compared to about 2 pages), this does not seem to be a logical explanation. Differences in the analysis of NM1 and NM2 for the experimental group, while not evident in the quantitative scoring of these data, were apparent in the qualitative analysis. These findings will be elaborated upon in the discussion of the writing data.

Table 2

Means and Standard Deviations on Holistic Writing Scores by Level of Teaching Experience

Group Level (N)	NM1		NM2		JB1	
	Exp.	Con.	Exp.	Con.	Exp.	Con.
1- ST (8)	2.30 (1.00)	2.40 (.72)	2.39 (1.08)	1.76 (.81)	2.06 (.80)	1.76 (.96)
2- BT (8)	2.83 (.58)	2.69 (.75)	2.69 (.52)	2.28 (.81)	2.75 (.88)	2.27 (.87)
3- ET (8)	3.43 (.50)	3.11 (.76)	3.39 (.51)	2.67 (1.03)	3.20 (.74)	3.05 (.87)
Total (N)	(12)	(12)	(12)	(11)*	(12)	(12)

*Data missing from one BT in the control group.

Although the omnibus F-test was not significant for level of experience in NM2, the similarity of the descriptive statistics, and the consistency in the patterns in these data to those in NM1 and JB, prompted additional post hoc analyses. These indicated that while the scores of the experienced teachers were higher than those of the student teachers on NM2 ($t(7) = -2.11, p < .05$), there was no difference between the holistic ratings of the experienced teachers and the beginning teachers on their analyses of NM2.

The ANOVA for participants' holistic ratings of the Julianne Bloom case indicated a similar pattern to that found in the first writing. That is, there was a main effect for level of experience, $F(2, 24) = 6.56, p < .01$, but not for group, and there was no significant interaction. Post hoc comparisons indicated once again that written analyses of experienced teachers were rated higher than both beginning teachers ($t(7) = -3.29, p < .01$) and student teachers ($t(7) = -3.08, p < .01$), but the difference between student and beginning teachers was not significant ($t(7) = -1.71, p < .1$).

A further look at Table 2 shows that the mean scores on each of the three written case analyses declined over time across the three written case analyses. Perhaps this decline for the control group represents participants' lack of motivation to spend much time or effort on subsequent analyses knowing that there was little accountability and that they would not receive any feedback. For the experimental group, perhaps lower scores on the Julianne Bloom case reflect knowledge that they would not be discussing this case. However, this decline in scores also calls into question the reliability of the scoring system used, and highlights the need for interrater reliability when using this kind of scoring scheme. However, since there were clear qualitative differences in these written analyses, these data are presented next in order to bring additional meaning to the form and content of teachers' analysis of this case.

Qualitative Analyses of the Writing and Discussion Data

Summary of findings from writing data. Further examination of the written case analyses was undertaken to discover what and how teachers with different levels of experience were thinking about these cases, and how experimental and control groups differed in their post-discussion analysis of the Nan Miller case. A summary of the salient findings from these data can be found in the Appendix. This information is based on qualitative analyses of the writing from all 24 teachers in this study, using the method of constant comparative analysis (Miles & Huberman, 1984). The results of these analyses were categorized to show how the written analyses of the NM 1, NM2, and JB cases revealed teachers' thinking and (a) their quality of understanding of the issues in the cases, (b) their awareness of factors that affect the teaching—learning process, (c) how they interpreted the

issues in the cases, (d) the focus of their analysis, and (e) the tone of their writing. These five categories emerged as recurrent themes after classifying all important points identified from the writing data.

Given that the main question of interest in this study was whether and how discussion affected teachers' thinking about cases, it is useful to begin with an analysis of how relatively more and less experienced teachers originally thought about the Nan Miller case based on their written analyses of it. This will serve as a baseline from which to compare how teachers' thinking did or did not change. What follows, then, is a discussion of the results of analyzing the data in relationship to these questions.

1. What is the content and form of thinking about cases in teachers with different levels of experience?

According to both the quantitative results and qualitative assessments, teachers in this study with varying levels of experience differed in how they thought about these cases. The more experienced teachers showed more complex, multi-dimensional understandings of the issues in these cases than less experienced teachers. With regard to form, the thinking of the less experienced teachers in this study was less reflective, more propositional in nature, and not as metacognitive or conditional as that of the more experienced teachers. That is, more experienced teachers displayed evidence in their writing that they were able to reflect both on their own thinking about the complexity of the issues in this case and take more than one perspective on these issues. They could see things from their own point of view, from Nan Miller's and Julianne Bloom's perspective, and from that of various students in the cases. Less experienced teachers, however, tended to regard the issues in the cases as either good or bad, or right or wrong, indicating an inability to get beyond their own perspectives and personal experiences to see the issues in the case from other points of view. These findings about the relative quality of understanding and the level of awareness of the issues in the case held fairly constant throughout the study for the three experience levels, and were indicative of the level of cognitive complexity, perspective-taking, and metacognitive awareness and thinking of the teachers in this study.

What follows are excerpts from participants' first analysis of the Nan Miller case that provide examples of how and what teachers with different levels of experience thought about this case at the outset.

Nan Miller 1: Original Analysis. Student teachers were quite critical and judgmental and focused their criticisms on the teacher in the case. Their tone was didactic in that they tried to tell the teacher what she *should* be doing. This was true for most of the student teachers, whether they were in the experimental or control condition. The few student teachers who were uncritical of Nan Miller were also very simplistic in their analysis of the case. In this example, the student teacher I call Emily, wrote in a tone that was both critical and didactic in telling how Nan Miller "could" and "should" have taught the writing lesson on spider maps. Note also that Emily's language is very certain, and not tentative, indicating a simplicity in her understanding of the multitude of issues in this case.

If Nan had really wanted all the kids to make spider maps, she should have set up the lesson differently. It could have been divided into a two-day lesson. On day one she could start off by telling the class they're going to learn a new strategy for organizing their ideas before writing. She should then model the activity by having the class work together to make a spider map about a place they all know, the classroom. She should have a list of questions they could use to describe the place (Where is my place? What does it look like? Smell like? Sound like? Who else goes there? Why do I go there? Do I bring anything with me? Why is it special to me?) and these could be posted in the class. She could elicit answers to these questions and write them up on a piece of butcher paper in the spider map format. After finishing this, she could hand out the spider maps and explain that she wants each of them to think of their own special place, and write about it using the spider map.

Beginning teachers were somewhat less critical, but more egocentric than more experienced teachers. For example, they focused on parts of the Nan Miller case that they could relate to their own personal classroom and their own struggles with teaching. For example, Jo's reaction to how Nan Miller conducted the spider map lesson was definitely influenced by her own teaching situation:

My thinking is governed by two concerns: first the abilities of my students that I teach personally (I also teach fourth grade). This would not have been an appropriate lesson presentation for them. It was way too abstract, just to be handed a piece of paper, given a few instructions on how it might be used, and then told to get to work. Then I ask myself "would this be appropriate for any student, even if they were of a higher academic level?" The answer is still "No" so I don't think it is just the performance level of my students.

Beginning teachers also focused on the teacher's presentation of the lesson and her personal relationships with students in the case, as can be seen in this next excerpt from Jo.

Back to the introduction of the lesson, though I would also have modeled this format. Nan could have chosen a place where she likes to go and duplicate a spider map on the board, filling it in with information about her place. That way she could give more specific examples of what she means by filling in the outer circles with details about the place. I found her explanation of how to fill in the spider map too vague, and I think some of her students did, too, as evidenced by their fooling around, not getting to work, and being confused about what the topic really was. Often when kids don't know what to do they'll fool around rather than ask for help.

The difference in focus between Emily and Jo is interesting. Student teachers, like Emily, focused mainly on the teacher's role in instruction. Beginning teachers, like Jo, were also teacher-centered, but they were more cognizant of their student's behavior and its connection to presentation of a lesson.

In contrast, the experienced teachers were not very critical of the Nan Miller case, and in fact were quite empathetic and non-judgmental. Their focus was on the students, the lesson, and the interaction of these factors. They were quite cognizant of the myriad of factors that affect teaching and learning. While Sally also has a plan for how Nan could teach this lesson, her ideas focused on what the students can do, rather than on what the teacher should do. Furthermore, Sally gives reasons why these activities would be helpful for students in a tone that is more straightforward and empathetic, rather than critical or didactic like the tone of the student teachers in this study. For example, Sally commented about Nan Miller's spider map writing lesson this way:

Another way to teach this lesson is to use the BAWP [Bay Area Writing Project] technique of "show, not tell." The students can draw a picture first of their place and then write about it. The students can also write about their room and then share it with each other, as in Donald Graves' writing workshop. Group conferences (large or small) in either case would help students with their writing by giving them other examples and thus, a better understanding of the assignment.

Julianne Bloom Case. There were also qualitative differences in the thinking of student, beginning, and experienced teachers about the Julianne Bloom case. For example, while most student teachers did not see any major problems with the content or the presentation of the lessons in the Julianne Bloom case, most experienced teachers connected to problems the teacher had in this case in trying to teach writing.

Student teachers were quite naive and uncritical in their thinking about this case. They said they like this teacher, and would probably teach writing much like she did in this case. In other words, the lessons described in this case were not problematic from their perspective. They were also much less critical of this case compared to NM 1 and to teachers with more experience. Their analyses were more descriptive than prescriptive. For example, Gina wrote about the writing lesson in the Julianne Bloom case this way:

Showing different examples of a dialogue between characters in the book is a good approach to take. I also thought that Julianne's approach to this activity was good. She had children create their own dialogues before having them write dialogues of the characters. I think this was a slow and painless process to gradually expose children to make connections between writing and reading. I would probably use a similar approach if I were teaching this lesson.

Beginning teachers were also much less critical of this case than the first. They focused on suggesting other ways to teach the lessons in the case and on telling how they would do things. Ilene expressed her thinking about the writing lesson in the Julianne Bloom case this way:

I like the way this teacher presents this lesson for the most part. It is much the way I would do it. She begins with a discussion of dialogue, what it is and how it looks on the page. She also makes sure to call on kids, not just because they volunteer to answer, but as a way of keeping them involved in the lesson (i.e., calling on Darrell when she noticed his table group was beginning to squirm). This can bring kids back when they may be beginning to tune out.

I also like the way she provided some ideas to get the kids started. I might also have asked some of the children for their ideas and perhaps modeled, having the students help, the creation of a short dialogue on the board. I think I might also have waited to announce that the students would be working in partners until I was ready to have them get to work. Often when you mention the word partners the kids get so busy thinking about who their partner will be they miss everything that comes after that.

In the excerpt above, we can see that Ilene's thinking was more complex than Gina's. She was able to coordinate her thinking about the lesson with thinking about classroom management. This is a more sophisticated understanding of the teaching and learning process than most student teachers showed, and an example of one of the ways that the thinking of the beginning teachers in this study differed from that of the student teachers. That is, most of the beginning teachers were able to give reasons behind the statements they made; for example, tell why they thought it was better to call on students than just take volunteers, or wait to assign partners or groups until after the instructions were given. Student teachers in this study, on the other hand, made declarative statements, but they did not give reasons to back up the propositional thinking. This difference between the more declarative understanding of student teachers, and the more conditional or procedural understanding of beginning teachers about when and why you might do something in the classroom is interesting to note because a beginning teacher's ability to articulate reasons behind their actions in the classrooms appears to be a bridge leading toward more expertise in teaching.

Experienced teachers, on the other hand, indicated that they resonated with this case because they were struggling with the same issues about critical thinking and teaching reading and writing that Julianne Bloom was talking about in this case. For example, Sally conveyed her metacognitive reaction to the cases and how she thought they helped her and other teachers:

It's important for us to analyze cases and raise questions and issues because it helps us with our teaching. We can look at another situation, compare it with our own teaching and learn from it... case studies also cause us to think about what we do and why rather than just doing something automatically.

Ray also commented in his analysis of the Julianne Bloom case in this same vein:

I found this teacher so much more appealing than the last case study. I see a lot of myself in her dealings with students, in her willingness to question what she has done, and in the constant grappling with trying to perfect our craft. Since I am presently in the position of having to defend my teaching style, I have found myself re-evaluating these directed writing lessons trying to find their place in my philosophy of writing and in what have been my attempts to create kids who just love writing. As such, I feel more sympathy for this teacher than Nan. Maybe its because I can see her mistakes as my own or perhaps her manner suggests an easy correction to the problem and future success. I'm not sure.

There were also individual differences with regard to the personal experiences and prior beliefs that teachers in this study brought with them to these cases, regardless of amount of teaching experience. For example, in their analysis of the Julianne Bloom case, only the teachers who were ethnic minorities themselves, or who were

bilingual, or who had worked in bilingual classrooms wrote about the bilingual nature of the classroom in this case, and how this impacted on the teaching and learning described in the case. The implications of this finding for the effectiveness of case methods, for the role of the facilitator, and for the assignment of field experiences deserves further thought and exploration.

2. How does discussing a case affect teachers' thinking? The quality, form, and content of thinking of teachers in the experimental group was apparently affected by their participation in the case discussion, compared to the control group teachers who did not have the same opportunities to exchange viewpoints and hear other teachers' ideas. Teachers in the experimental groups elaborated on their original thinking in NM2 to one degree or another, and displayed changes in their understanding of issues in the Nan Miller case. However, teachers in the control group tended to consolidate their ideas in NM2, and failed to present any new ideas or insights about issues in the case. They also displayed fewer changes in their thinking about the case.

Although the quantitative analysis comparing NM1 and NM2 did not reflect these findings statistically, qualitative analyses showed evidence that beginning teachers and student teachers in the experimental group benefited from the case discussion in that their thinking on NM2 was clearer, more explicit, and better elaborated. Less experienced teachers showed these changes in their thinking: (1) improved understandings of how to use the spider map activity, (2) more ideas about how to handle student diversity and classroom management issues, and (3) clearer, more explicit ideas about the importance of having clear goals and objectives that are matched to students' needs and the task.

Student teachers also displayed evidence in NM2 of improved understanding of issues in the case after the discussion. This was evident in explanations they added to statements that had only been declarative propositions in NW. Many of the understandings student teachers expressed only implicitly in NM1 were made explicit in NM2. In addition, student teachers showed a deeper understanding in NM2 of the issues in the case by giving reasons behind previously declarative judgments. For example, in this excerpt from NM2, Emily gave reasons for why she felt Nan was discouraged and frustrated about student behaviors. She also made a shift here from seeing Nan's problems as strictly management issues to seeing that there were also problems with the lesson. Note that words printed in italic indicate what Emily added to her original writing from NM1.

Nan becomes frustrated and discouraged by those students who she sees as having refused to comply with her instructions (*when, in fact, her instructions were not very clear*), and ends the lesson abruptly, feeling that she's lost control of her class and *failed to get her ideas across to the students*.

Jason certainly didn't need this technique to write effectively, and perhaps Kenya didn't either, in which case the spider maps would just seem like busy work. Nan didn't make clear to the class (or probably to herself either) that what she really wanted to see was a completed spider map, then a prose draft. Hopefully, this is just one of many strategies Nan will present to the class that might be useful in helping them to write. Spider maps may work for Nan and Chrissy, but there may be different strategies that would be more useful for the other children in her class.

Here we can see changes as Emily re-analyzed this case after the discussion. Emily's comment that she valued making the purposes of a lesson clear to the class was a restatement of her original thinking in NW, but her comments about offering many ways to organize writing besides just spider maps were new in NM2. Furthermore, this was an idea suggested by another participant during the case discussion, which apparently influenced Emily's thinking. Also, Emily was more explicit here in her acknowledgment that students have different writing styles and needs. Emily's comment about spider maps working for the teacher, and for some students but not for others, can also be traced to the discussion.

Not surprisingly, one case discussion and two written analyses of a case did not completely change this student teacher's way of thinking. However, it is encouraging to see glimpses of more complex understandings about

teaching and learning issues after the discussion of a case. Perhaps with more opportunities to read, write about, and discuss cases, student teachers like Emily can be supported in their development as teachers.

Beginning teachers also displayed an increased level of reflection with regard to thinking about their own teaching, and about issues similar to those in the case. For instance, there was some evidence of conditional, procedural thinking emerging in some of the teachers. Jo's thinking about handling student behavior, for example, was influenced by the discussion of this topic in her group. Whether Jo acts on these new thoughts in her own teaching, or whether they carry over in her thinking about similar issues in another case, remains to be seen. However, from what Jo wrote at the end of NM2, there is reason to believe that the experience of participating in the case discussion impacted Jo's thinking and could influence her actions.

I enjoyed our discussion on Sat., it really brought up some other issues for me that I hadn't thought about and made my reflection on the case a little deeper. I think this is a helpful tool for teachers; at one time or another I know I have done all of these things —and by discussing it together, I was able to think through some things that I usually do automatically, and really consider my personal motives and goals for my students. It was also helpful because I heard different strategies presented that I might be able to apply in my own classroom situation. Teaching can be a very isolating experience. I think it really helps to have discussions with others in order to reflect upon what we are doing. I think case discussions could really complement the peer coaching model in teacher training and inservice continuing education work.

Experienced teachers showed fewer effects on their thinking from the case discussion, perhaps due to the fact their thinking about these issues in the Nan Miller case was already quite well elaborated. In general, their original ideas tended to be validated rather than changed or challenged by the discussion. They mainly assimilated any new ideas to their current ways of thinking, and continued to display evidence of conditional understandings and metacognitive thinking about the issues in this case. However, the discussion was a catalyst for some experienced teachers to re-think certain issues, and even to elaborate upon new ideas that were spawned by the discussion. Carl's writing in NM2 is an example of the kind of complex, conditional thinking that experienced teachers displayed throughout this study.

One new reflection did occur to me, which had to do with the idea that Nan was inconsistent in her treatment of the students — for instance, that she didn't scold Jerrilyn for not following directions, when she reacted rather strongly to Kenya. Similarly she didn't scold Calvin's rudeness when again she reacted strongly to Kenya.

There are a couple of ways of looking at this:

First of all, I don't think it is the function of a teacher to be fair to person A on person B's terms. That is, the advantage of having a human teacher is that he can treat kids differently under similar circumstances — generally because the underlying condition of the students may vary despite outward appearances.

On the other hand — the situation may not be so controlled here. Nan's reaction to Kenya may be because a power struggle is going on — and why that could be is not clear. But maybe she didn't react to Jerrilyn because she realized that Jerrilyn needed to draw things first. Since Kenya presumably never did much of anything, Nan would not have had a similar insight into what approach might work best for Kenya.

It may also be a cultural miscommunication (and by cultural, I don't necessarily mean ethnic, because families can have their own cultures). Perhaps Kenya is simply looking for limits (as many adolescents do), and Nan doesn't have quite the right language (in terms of pragmatics, that is) to meet her and let her know where the limit is.

Similar conditions could account for Nan perhaps misunderstanding that Kenya is struggling with learning difficulties or home disruptions (if, in fact, she is).

At any rate, their reactions to each other most likely signify miscommunication at some level.

So, although the mean quantitative scores of the experienced teachers on their analysis of NM2 did not change from their scores on NM1, they continued to show complex, conditional, and metacognitive thinking about this case.

In their writing about the Julianne Bloom case, there was little difference qualitatively between the experimental and control groups with regard to their analysis of the content of this case. The one exception to this is that the form of analysis of some participants in the experimental group was apparently affected by the format of the discussion. The case discussions began by eliciting all the facts of the case and explicitly separating them from inferences that participants made. Several teachers with different levels of experience employed this same fact/inference dichotomy in their writing about the Julianne Bloom case, but not all of them. However, this had little effect on their level of thinking about the content of the case.

On the other hand, teachers in the control group at all three levels of experience reiterated their original ideas and solidified their original positions about issues in the case. This was particularly evident in the less experienced teachers. They raised few new issues, had no new insights, and tended to summarize their original thinking. If they raised any new topics, they dropped others, or just focused their re-analysis on one or two topics they had discussed in their first analysis of this case.

Although quantity of writing is not necessarily an indicator of higher levels or better quality of thinking, it should be noted once again that teachers in the control group wrote an average of only 2 pages on NM2 compared to the 5-6 pages they had written for NM1, while the experimental groups wrote an average of another 6 pages for NM2. This gives rise to speculation that teachers in the experimental group were motivated by the discussion to write extensively about the same case a second time compared to teachers in the control group. We can speculate that teachers in the discussion groups had more food for thought than those who did not participate in any discussion, hence more to talk about in their second analysis. For example, student teachers in the control group continued to make declarative statements and mix the facts of the case with their inferences, while student teachers in the experimental group began to show some conditional thinking in NM2. Beginning teachers in the control group rarely gave reasons behind their statements in NM1 or NM2, suggesting that their original thinking had become solidified rather than expanded by a second analysis of the case. They also showed no evidence of any conditional understanding of the issues in the case. However, experienced teachers in the control group continued to display already complex understandings of the case and also showed continued evidence of metacognitive thinking about the issues in the case. Nevertheless, they also rehashed their original ideas and focused their re-analysis in NM2 on just one or two points, failing to raise new issues or display new insights.

3. What are the influences during a case discussion on and by teachers with different levels of experience?

Earlier results presented how and what teachers with different levels of experience thought about the cases in this study, and how their thinking was affected by discussion. However, how teachers influenced others and were influenced during the case discussion in this study is interesting. By "influence" I mean ideas that were brought up by participants during the discussions that showed up later in the thinking and writing of others about the case.

In this study, despite what might be expected from a Vygotskian perspective, some of the ideas and comments raised by all of the participants had an impact on others regardless of the level of experience of the teachers initiating the ideas. One example of this is the issue of "process vs. product" in teaching in general, and in teaching writing in particular. This topic was originally raised during the discussion of the Nan Miller case by a student teacher, Kit. As a result of the discussion of process versus product this topic was commented on in

NM2 by other student teachers and by beginning and experienced teachers as well. For example, Emily, a student teacher, wrote:

The discussion itself was very interesting, and the people were just a little intimidating. It confirmed some of my ideas though which was encouraging, and brought up others that I wouldn't have thought of in this stage of development as a teacher.

I hadn't thought as much about the distinction between process and product, and I think that's probably a good distinction to keep in mind when determining what your goals are for a lesson. In teaching writing, I would want to stress with my students that not every strategy will be useful for every person or purpose.

Jo, a beginning teacher who participated in the same discussion, also mentioned the process/ product issue in her second analysis of Nan Miller:

In, addition after reflecting on our discussion, it does seem that in this lesson at least, she was confusing process with product and her goal and expectations were not clear to the students.

Jo also mentioned "process" in her analysis of the Julianne Bloom case a month later. However, it was not clear whether she did so because she was still thinking about the issue of focusing on process versus product in teaching that was raised during the discussion, or whether she was talking about the writing process in general. However, given that Jo underlined the word *process* and talked about *teaching as a process*, it seems that this notion did carry over and influence Jo's thinking and analysis of the Julianne Bloom case.

In order to develop critical thinking I think one must teach a *process* of critical analysis — i.e., if one wants students to learn how to write dialogue in order to deepen their understanding and appreciation of the characters they're writing and reading about, the *teaching should be a process as well as the writing exercise the students engage in.*

Like the other teachers in this discussion group, Sally, an experienced teacher, was also influenced by the conversations about process/ product, even though it was raised initially by a student teacher. Sally had not written about this topic at all in NM1, but she mentioned it twice in NM2.

She seems to be more interested in the product as opposed to the process of writing, even though I think she'd like to believe she was more process-oriented...

I would also ask her to think about her original purpose of giving the assignment — was she interested in the process of writing or the product?

These "influences" were not always direct. That is, teachers did not have to engage in specific verbal interactions for their thinking to be influenced by something that occurred in the discussion. A teacher's thinking was just as likely to be influenced by listening to the interactions of others in the group as by directly engaging in conversation about the topic. Furthermore, not all influences were traced to overt conflicts, such as arguments or debates about a topic during the discussion. The kinds of conflicts that caused changes in the thinking of these teachers were internal conflicts, where ideas they heard in the discussion contradicted or added to their own thinking. This apparently served as a catalyst for them to rethink their original ideas about an issue, sometimes elaborating or clarifying their own understanding, and sometimes consolidating it.

Summary and Conclusions

For participants in this study, it appeared that having the opportunity to read, write, and discuss a case did affect their thinking about the case. The thinking of teachers with various levels of experience benefited in several ways from the discussion. For very experienced teachers, discussion seemed to be a catalyst for reflection and

promoted metacognition. For the less experienced teachers and the student teachers the discussion appeared to allow them to clarify and/or elaborate their thinking about particular issues in the case. On the other hand, only reading and writing about a case appeared to provide little stimulus for teachers to elaborate their understanding or increase their perspective on the issues in the case. This was especially true for the less experienced and student teachers. Furthermore, without the opportunity to interact with other teachers and discuss the case, teachers in the control group just reiterated their original thinking about the case, solidifying and reinforcing their responses, rather than gaining any new perspectives.

The social interaction during the discussion of a case appeared to be the source of changes in teachers' thinking who participated in the discussion. There is evidence that conflicting ideas served as a catalyst for important changes in teachers' thinking even when there wasn't necessarily any overt disagreement or conflict during the discussion. Therefore, it appears that teachers can also learn from a case discussion in which they are relatively more of a listener than a talker, provided that ideas are raised that may eventually be a catalyst for internal cognitive conflict. Not surprisingly, teachers' previous experiences, personal background, and their individual interests appear to serve as a filter for what is understood from a case discussion, as was evidenced by the fact that not all participants reacted to the bilingual nature of the class in the Julianne Bloom case.

Recommendations for Further Research

While it appears from this study that the quality, form, and content of teachers' thinking can be affected in the short term by the discussion of a case, it must be noted that one case discussion and two written analyses do not appear to have very much influence or transfer to a similar case one month later. It would be valuable to replicate this study over a longer period of time, perhaps having teachers discuss or just write about a variety of cases over the course of a semester or a year. It would also be useful to try to study whether teachers in case-based courses actually apply what they learn to their classroom practices and/or their interactions with students. The ultimate question is whether or not the use of case-based teaching has an impact on student learning. However, before we attempt to tackle this question it would be valuable to see whether more homogeneous groups of teachers with respect to experience can learn from case discussions as heterogeneous groups did in this study. Furthermore, in preservice teacher education programs, where most of the student teachers are inexperienced it will also be very important to study the role of the facilitator in the discussion, since the instructor/facilitator may be the most experienced teacher in the group.

Implications for Teacher Education

The use of case-based teaching for both preservice and inservice teachers appears to have potential. We know that teachers prefer using cases over other more traditional methods of instruction (James, 1991), and we know they can also learn about classroom management (James, 1990; Stoiber, 1991), motivational issues (Richardson, 1991), mathematics instruction (Barnett, 1991a, 1991b), and cultural diversity (Noordhoff & Kleinfeld, 1991) through the use of cases. We also know that specific qualities of teachers' thinking can be analyzed through their writing about cases (Harrington, 1993). And, we know that the discussion of the case *is* an important factor in promoting the development of teachers' thinking about cases. Case discussions appear to be especially valuable for student teachers and beginning teachers because they can lead to clearer, more elaborated understandings about the issues in cases. Furthermore, case discussions may be a catalyst for recognizing the need to change or articulate one's thinking. For experienced inservice teachers case discussions also appear to have the potential to foster reflection and promote metacognitive thinking. If these are important goals for promoting the development of teachers' thinking, which I believe they are, then case discussions are a valuable pedagogical tool for both preservice and inservice teacher education.

Appendix

Themes From NMI Writing Data

Quality of Understanding

ST: Unidimensional, declarative knowledge only, tacit and/or explicit understanding of issues in case.

BT: More multidimensional understandings, declarative statements are backed with reasons.

ET: Issues understood explicitly, thinking is multidimensional, display conditional understanding, make if-then statements.

Awareness of Factors That Affect the Teaching/ Learning Process

ST: No awareness of classroom context, understand key issues explicitly and others implicitly, adequate ideas for teaching lesson but most are teacher-centered.

BT: Connect case to own classroom issues, elaborate on lesson in case and present new ideas lesson, ideas are less teacher-centered and more focused on students.

ET: Grasp role of classroom context and multiple influences on lesson, lesson ideas are consistently student-centered.

Interpretation of Issues in Case

ST: Interpret teacher's problems with certain students as classroom management problems.

BT: Interpret teacher's problems as symptomatic of poor personal relations with students.

ET: Interpret problems as a mismatch of task to student needs.

Focus

ST: On teacher's personality.

BT: On presentation of the lesson and on self. ET: On students' interaction with the lesson.

Tone

ST: Very critical of teacher, didactic, judgmental, some are tentative.

BT: Less critical.

ET: Straightforward and empathetic, not critical or didactic.

Themes From NM2 Writing Data

Quality of Understanding

Experimental Group

ST: Thinking is clarified and/or elaborated, understandings are clearer and more explicit, assimilations and accommodations in thinking apparent, separate facts from inferences, add some reasons behind declarative statements, use some conditional thinking.

BT: Understandings are clarified, modified, and elaborated, continue to back up declarative statements with explanations, begin displaying conditional thinking, increased level of reflection and analysis of own teaching (but fixed on finding other ways to fix the lesson), show both assimilations and accommodations in thinking, understand that all teachers make mistakes.

ET: Original ideas are validated rather than changed or challenged, continue to display conditional understandings, show meta-cognitive thinking about topics in case, mainly assimilate new ideas to already adequate understandings, ask questions, refrain from making judgments because of lack of information, male ET's abstract issues in case to larger societal problems.

Control Group

ST: Thinking is rehashed, ideas are summarized and consolidated, very few new ideas raised, others are dropped, thinking remains static, lack of accommodations, continue to make declarative statements with no explanation, continue to mix facts and inferences, analysis drops from 5-6 pages to 2 pages.

BT: Rehash same ideas with little elaboration, focus analysis on one or two topics, raise few new issues, original thinking is reinforced and consolidated, no evidence of conditional thinking developing, analysis drops from 5-6 pages to 2 pages.

ET: Rehash original ideas, or raise minor details, focus re-analysis on one or two main points, continue to display more complex thinking, but show no new ideas or insights, offer no solutions and ask no more questions, no evidence of conditional thinking, continue to give developmental explanations but turn these into declarative statements, continue to show metacognitive thinking, analysis drops from 5-6 pages to 2 pages.

Awareness of Factors That Affect the Teaching/Learning Process

Experimental Group

ST: Display more flexibility and fluency about uses of spider map lesson, ideas for how to teach the lesson are more detailed and better elaborated.

BT: New perspectives on how to handle student behavior, more elaborated understanding of need for match between lesson, goals, and student needs, see spider map as one useful tool for organizing writing.

ET: Have varied ideas about how to teach the lesson in the case and give reasons, ideas are all student-centered, continue to have well elaborated understanding of key issues in case.

Control Group

ST: No new ideas for how to teach lesson or handle student behaviors, continue to see problems as management issues.

BT: No new perspectives on how to handle student behaviors or ways to teach the spider map lesson, continue to be concerned about presentation of the lesson and student behaviors.

ET: Continue to be able to take student and teacher's perspectives, continue to display explicit, multi-dimensional understanding of key issues in case.

Focus/ Tone

Experimental Group

ST: Less critical and judgmental, not didactic. BT: Appreciate that all teachers make mistakes, not critical.

ET: Continue to focus on students and be understanding of both student and teacher needs.

Control Group

ST: Still judgmental, but not as critical of this case overall.

BT: Focus on self, somewhat critical of how teacher operates.

ET: Critical but empathetic, focus on lesson and student needs.

Themes From JB Writing Data

Quality of Understanding

ST: Experimental group displays clearer and more specific thinking, gives reasons behind some declarative statements, e.g., why clear goals and objectives are important, also separate facts of case from own inferences. Some evidence of conditional thinking, but little evidence of reflection or metacognitive thinking. Control group understanding is rather naive.

BT: Continue to give reasons for WHY they would do something, careful to separate facts from inferences and opinions. Some evidence on conditional thinking, use if —then statements. Some evidence of developing metacognitive thinking, and less egocentric reflection.

ET: Experimental group continues to show thinking that is complex, well elaborated, reasoned and student-focused. They also carefully separates facts and inferences, and continue to raise questions and reserve judgment. Continue to use conditional thinking, and also continue to use case as a catalyst for reflection and metacognitive thinking.

Awareness of Factors That Affect the Teaching/ Learning Process

ST: Most are unaware of developmentally inappropriate nature of lesson in case, some unaware of impact of bilingual students on teaching and learning.

BT: Tacit understanding that task was developmentally inappropriate for most students.

ET: Use developmental terminology spontaneously and explicitly to explain why lesson is inappropriate.

Focus

ST: Experimental group more focused on match between task, student learning and teacher's goals for lesson. Control group focused on lesson ideas.

BT: Much less critical overall, except about mismatch of lesson to student needs. Also focus on other ways to teach the lesson and how they would do it.

ET: Focus on better ways to sequence the lessons in the case.

Interpretation of Issues in Case

ST: Experimental group focused on mismatch between teacher's goals and her lesson, but control group sees teacher and lesson as adequate and unproblematic.

BT:

ET: Say they are struggling with same issues as teacher: how to teach critical thinking and help student connect reading and writing.

Tone

ST: Much less critical overall, less didactic and more descriptive than prescriptive.

BT: Empathetic. Think that this teacher is a better teacher than Nan Miller.

ET: Generally uncritical except of instructions for one task that is a mismatch of lesson to student needs. Tone is also factual and straightforward.

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