

Class Planning Strategies of Expert and Novice Teachers

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Teaching is an exercise in problem solving. Every moment, a teacher must consider questions of what to teach and how to teach it, based on the subject matter, the students' current understanding of the material, and new issues that students bring to the class. Teacher planning is a complex skill consisting of assembling schemas into sequences that meet specific goals, assembling these goals into sequences that will meet higher teaching objectives, and accomplishing the latter two within the constraints of the total system. Continually, teachers must balance student needs with the syllabus, while remaining "flexible, responsive, and consistent" (Leinhardt 1989).

As in the case of many problems, lesson planning can be improved through cognitive strategy training (Rogien 1998), and teachers often learn much about instruction style through their personal education (Gatbonton 1999). However, given the dynamic nature of the classroom experience, courses in class planning and experiences as a student cannot possibly teach all a teacher needs to know. Teaching experience is the key.

Leinhardt (1989) studied the class planning—and implementation of these plans—of expert and novice elementary mathematics teachers. Through verbal protocol analysis, it was found that experienced mathematics teachers were more likely than novices to construct coherent, highly organized lesson plans that built upon students' prior knowledge. While novices were often aware of the faults of their own lesson plans—lack of structure, failure to tie in the day's material with surrounding material—they did not necessarily know how to improve them. This is evidence that sheer experience and learning that comes with it are vital to teaching expertise.

A study of experienced ESL—English as a Second Language—teachers by Gatbonton (1999) further identified characteristics of expert teaching. In the study, the teachers viewed videotapes of themselves teaching and then reflected, in verbal protocol, on what they perceived to be their pedagogical thoughts during teaching. Aside from domain specific considerations, the teachers were noted to be highly sensitive to their students' contributions to the class, consistently aware of lesson goals when determining class content at each moment, familiar with methods of achieving desirable instructional flow, aware of the need to know and have good rapport with students, and consistently preoccupied with their students' progress in the course of the class.

In this exploratory study, I will attempt to explore the mental representations of teaching and learning held by teachers of varying amounts of experience. In particular, I will study the strategies of novice and expert

teachers, as demonstrated by the considerations they make in planning a class session. I will identify which problem-solving patterns, if any, are characteristic of novice versus expert teachers and attempt to provide rationale for the results.

Although the study was not carried out with any specific expected results in mind, it was presumed that teachers' verbal protocol would exhibit characteristics—in varying quantity or strength, depending upon individual differences or expert versus novice differences—of the protocol of the expert teachers in Gatbonton's study (1999).

Scientific relevance

In this age of international competition and technological advancement, improving education has become a particular concern. Much research is being done to understand and improve school curricula, learning environments, learning tools, and teaching methods. In the latter instance, it is of utmost importance to understand what the components of good teaching are and what skills and strategies good teachers possess and implement.

While having teaching experience does not necessarily imply that the teaching is effective, presumably teachers learn, over ten or more years, how to improve their methodology. It is also reasonable to assume that some alterations occur in teachers' mental representations of the problems of teaching, lesson planning, and synthesizing material for classroom use. The results of this study will contribute to our understanding of what teaching experience contributes to a teacher's methodology and strategies, and may—if one assumes that experience enhances ability—aid in identifying characteristics that differentiate stronger teachers from less effective ones.

Methods

Participants

All participants were recruited from the Carnegie Mellon University's English department. For lack of a measure of expertise, participants were selected on the basis of experience. In particular, the researcher selected a new teacher, a teacher with two or three years of experience, and a teacher who had taught for more than ten years—the time often cited as that required to achieve world class expertise.

The "novice" teacher was a first year doctoral student of Rhetoric who just during the semester had begun to teach interpretation and argument at the college level. He had also occasionally taught advanced composition as a substitute teacher and had tutored peers in English and philosophy, at his undergraduate university.

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The teacher of "intermediate" experience was a second year doctoral student of Literary and Cultural Theory who, over six college semesters, had taught courses in developmental writing, introductory writing, interpretation and argument, and grammar. He had also led a discussion group for more than a year.

The "expert" teacher was an associate professor of English who, over more than ten years, had taught courses in argumentation and debate, writing, programming, information design, and swimming.

Materials

Twenty-four hours prior to the participants' sessions, the participants were provided with a packet of materials to read before their sessions. The packet included an excerpt from "The Pattern of an Argument: Data and Warrants" (Toulmin 1958) focusing on the definition of data, warrants, and claims; a copy of the essay "The Real Message of Creationism" (Krauthammer 1999); and a list of example data, warrants, and claims drawn from the essay by the researcher, to suggest to the participants ways that the Toulmin and Krauthammer material could be linked in thought.

The sessions themselves took place in a small office with a desk and two chairs, one for the participant and the other, off to the side, for the researcher. A small tape recorder with an audiotape sat on the desk across from the participant. The participant was provided with a legal pad of paper, two pens, and an instruction sheet. Participants brought the packet of materials with them to the sessions.

Procedure

Participants were welcomed into the office and invited to sit at the desk. After reading and signing the consent form for participation, and completing the participant data sheet, the participants were given the instructions for the task. At this time, the researcher began recording the session.

In essence, the participants were told to plan a 50-minute class session for a class of college freshmen in an introductory argumentation course, based upon the material in the packets. They were told to consider such elements as teaching format, content covered and in what manner, sequence of events, students' knowledge base and reasoning skills, class dynamics and interest level, and points of possible confusion. The final product, participants were told, was to be a brief written outline of their proposed class session.

The researcher requested that the participants "think aloud" as they planned their class sessions. The participants were told that if they had any questions, the researcher would try to answer them. Participants, however, had few questions beyond requiring some occasional clarification of what the

hypothetical students had studied or whether it was necessary at that time to find specific examples from the reading.

After the participants planned their lessons in words and writing and announced their completion of the task, the researcher turned off the tape recorder. At this time, the researcher explained the purpose of the study and answered any questions the participants had about the study.

Results

Factoring in Students' Contributions

Gatbonton (1999) noted that expert ESL teachers tend to consider student contributions to the class in terms of the students' personalities, abilities, needs, attitudes, background, and learning styles. All three teachers in this study demonstrated considerable attention to these details as well.

The novice teacher viewed much of the task with respect to how his own students behave, and he geared much of his planned dialogue with his students explicitly in mind. For instance, he makes mention of what his students enjoy or know on several occasions, as in, "They really like the idea of backing up", "They like it when I cite authority from elsewhere," and "I'd use the word 'heuristic' because they really like that, they've learned that, they know what it is."

The novice teacher was also particularly concerned with his students' ability to keep up with the material and to make contributions to the class. He expressed the importance of students' ideas making up the class repeatedly, as when he initially emphasized that he prefers to use a Socratic method of teaching, asking lots of questions. "It's really important that they see that [the ideas] and that it's not just me telling them it's that way," he said. To accomplish this, he planned to implement what he called a "fishing style" of teaching in which he tries "to steer them [his students] toward specific ways [of thinking] and make them feel like they've done it themselves."

The novice teacher also seemed particularly attuned to his students' potential shortcomings or lack of understanding. He said he knew his students might not be fully alert or tuned in to the subject matter, and he expressed his readiness to prompt them "if it's really obvious that no one really understood it or read it." He expressed his concern for moving the students from a state of dependence to independence with regard to the subject matter, commencing with class discussion, moving on to group work, and assigning an independent homework assignment at the end.

The intermediate teacher did not speak much about the dynamics of his own classroom, or of the classroom he expected to encounter. Nor did he mention what kind of specific input he would want or expect from his students. He was, however, interested in challenging his students gradually and moving them toward independence in the task—beginning with a full

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class discussion, moving on to more challenging examples in group work but with access to his professorial assistance, and ending with an independent homework assignment on a "more complex" article.

The expert teacher expressed that to anticipate class dynamics in this sort of hypothetical situation is difficult. However, she anticipated that students enjoy being entertained. Thus she chose to open the class period in this way: "Usually you can get students laughing at this point because you can do some role playing with things like two people screaming at each other in a funny way." The expert teacher also planned her class session with the students' growing independence on the subject matter in mind, beginning with full class discussion, moving to having a volunteer before the whole class, continuing on to small group work, and closing with an independent homework assignment.

Determining the Contents of Teaching

In order to determine the contents of teaching, according to Gatbonton (1999), the teacher must keep goals of the lesson in view at all times. In the protocol of this study, such thinking was evidenced by the teachers' decision actions—decisions about the appropriateness of material, decisions about what materials to prepare ahead of time for the students, and decisions about class format, sequence, and contents.

All three teachers followed a remarkably similar pattern in their design of their class sessions. All three decided to begin the class with a full group discussion in which the essay and the Toulmin terminology would be covered. All three also decided to eventually break the class into small groups in order to work on further examples on a more independent basis before returning to the full group discussion at the end of class. All three teachers decided that the group work would consist of picking out the patterns of argument from the assigned essay, although the intermediate teacher departed from this slightly by choosing to prepare a worksheet ahead of time that would be based on the assigned essay.

Facilitating the Instructional Flow

In the Gatbonton study (1999), starting activities, reviewing past lessons, pushing students to go on, directing the students toward their intended goals, managing time, anticipating future activities, and recapping activities are listed as components of the facilitation of instructional flow. In this study, all three teachers seemed to have a good idea of how to carry out a sequence of classroom activities in an orderly and logical fashion as evidenced by the sequence of their verbal outlines. Likewise, all three teachers continually expressed methods of carrying the students' discussion on.

The expert teacher seemed to pay the most attention to the components of directing students toward intended goals and recapping activities. Of the three, she was the only one who made explicit mention of telling the students what the goals of the class would be. She planned to do so upon the original assignment of the essay—"The goal of that, I probably told them, is that we're going to be working with the article . . . and to understand the patterns of argumentation"—and upon the commencement of the class session. Of the three teachers, the expert teacher was also the only one who explicitly mentioned that she would spend time recapping the session's activities and accomplishments. Indeed, numerous times she repeated the phrase, "And what does that get us?"

All three teachers paid some attention to time management. The intermediate teacher in particular was meticulous about judging how long each activity should take in order to ensure that all material would be covered in the 50 minute period. The novice teacher and the expert teacher did not pay such fine grain attention to time, but did mention in their protocol such phrases as, "depending on where we are in time" and "I would see how time is going."

The novice teacher did not mention wider learning goals beyond this hypothetical class session. The intermediate teacher, however, did consider the wider scope of the course. He mentioned that he would assign homework and another worksheet for the students, "if we were going to do Toulmin seriously." Likewise, the expert teacher emphasized the need to know Toulmin's terminology well, "if we're actually going to be working with it [Toulmin's framework]."

Two of the three teachers were concerned about the students' prior knowledge. The novice teacher expressed concern over whether the students would know what a heuristic was, since he wished to explain Toulmin's framework as a heuristic, and he worried over whether the students would have read Toulmin before coming to class. The expert teacher was concerned about this latter point as well, and additionally wondered whether the class would even know what an argument was. The intermediate teacher did not seem to question the students' knowledge base; he appeared to assume that students knew what an argument was but did not know Toulmin's terminology, and went from there.

Building Rapport

Gatbonton (1999) defines building rapport as including making contact with and having good rapport with students, ensuring student comfort, protecting students from embarrassment, and reinforcing and encouraging students to go on. In this task, none of the three teachers made mention of one-to-one interaction with the students. Instead, this sort of planning seemed to be tied to the selection of the Krauthammer (1999) essay. While the novice

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teacher made no mention of the article's appropriateness, both the intermediate and the expert teacher expressed concern over its controversial content (creationism and the teaching of religious values in public schools) and how it would affect class dynamics.

The intermediate teacher decided that given the choice he would probably not use this article for a class discussion. He said, "I might be a little sensitive about using this one because, you know, I don't know about my students' religious beliefs, and since I'm very irreligious, I'd be afraid I might step on someone's feelings and it would get in the way of the lesson."

The expert teacher did not suggest abandoning the essay, but emphasized the need to ensure that the classroom environment was conducive to open, respectful discussion of ideas. Since certain students might have strong emotions on the issues of religion and secular humanism and the public schools, it would be "important to establish a respect for sharing those perspectives and keeping that kind of respect, and to do that requires introducing a model of argumentation that goes beyond this notion of two people screaming at each other."

Monitoring Student Progress

Gatbonton (1999) listed checking whether students understood instructions, anticipating potential difficulties, ensuring that students are on task, noting their difficulties and failures, and recording their successes as important parts of monitoring student progress, as demonstrated by the expert ESL teachers.

All three teachers planned to, during their 50-minute class session, make several checks of their students' understanding. The novice teacher mentioned that he would check for comprehension on four occasions—at the beginning of class, to make sure the students understood the assigned essay; on how well the students understood the notion of claims; on the distinction between data and warrants; and after the students' group work. The intermediate teacher planned to check comprehension at four points as well—on the students' knowledge of the assigned article, on their understanding of the argument pattern, on their understanding of the class examples, and on the success of the group work. The expert teacher also made four mentions of checking students' comprehension: if the students understood Toulmin's terminology through the examples, if they understood the information after going through an example with a student volunteer, if they understood the overall ideas before moving on to group work, and—at the end of class—she had totally confused them.

Only the expert teacher made explicit mention of points of possible confusion (which, she facetiously claimed, would be the data, claim, and warrant), but by virtue of their frequent mention of comprehension checks, it is obvious that all three teachers were taking into consideration points of possible confusion throughout the lesson.

Final Notes on the Analysis

The verbal protocol analysis regarding lesson planning strategies is far from complete. The results here represent a comprehensive analysis of the considerations the instructors take while planning class sessions; however, no analysis of the instructors' thought processes has yet been completed. Such analyses would examine the order in which participants mentioned certain aspects of class planning, to attempt to determine what thought processes the individuals used when constructing their plans and whether there are any interesting patterns in their thought processes.

Discussion

In interpreting the results of this study, it should be kept in mind that since only three teachers participated, all differences observed could be attributed to differences in the individual, rather than differences in expertise or length of experience. Whichever way they are viewed, however, the results provide some fascinating insights into the considerations that teachers make when planning their class sessions. Furthermore, some rationale can be provided to support the notion that some of differences exhibited could be attributed to expertise.

Across individuals and experience levels (and, presumably, levels of expertise), all teachers followed certain patterns quite similarly. For instance, all three teachers chose to format their class sessions in practically identical ways—starting with a full group discussion of the assigned article, moving on to a full group discussion of Toulmin's terminology and examples, splitting the students into pairs to work on more examples, and returning to the full group discussion before assigning homework. It may be that this class format is prototypical of college writing courses, and that the teachers' presumably similar experiences within the department and in their undergraduate or other teaching experiences provided similar fodder from which to work.

Again across individuals and experience levels, all the teachers showed concern for the timing of events in the class—with a particular consciousness of the class period's time parameters—and for the students' comprehension of the material. It is likely that timing and the necessity of student comprehension are two of the lessons learned most quickly by new teachers, as without the two every class period is sure to be a failure. If a teacher cannot consistently cover the material in the allotted time, or if the students are completely swamped by the new material, progression of the course will be rendered impossible.

One of the primary differences observed in the results was the novice teacher's emphasis on his students' interests and needs. While the more experienced teachers briefly touched on these points, the amount of time they

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spent preoccupied with them was far less than that spent by the novice. There are a couple of possible explanations for this phenomenon. First, the novice teacher has taught only one formal class on a regular basis, and so he has no other classroom experiences to generalize across. All his knowledge of running a classroom must be drawn from this one instance of his English class, and thus details specific to the instance prevail in his protocol. Second, because he is a new teacher, he may be less confident of his ability to carry out a lesson and retain the interest of his students, and so he makes sure to refer back to his students frequently to check on how he is keeping their attention. Third, the novice teacher was the participant who was most recently an undergraduate student himself. He may remember the concerns he himself had as a student, and may wish to ensure that his own students do not experience similar anxieties; thus he pays extra attention to their needs.

Another main difference in the results was that the expert teacher was the only one to make mention of letting the students know the goals of the class session and the assignments ahead of time, and to recap information touched on earlier in the lesson. Possible rationale for this is that the expert teacher has had many more years of experience organizing frameworks for her courses, and she has been able to observe the successes and failures of her class session organization over time. She may have, in her experience, found that it is preferable for students to have a clear notion of what their goals in the class should be and then to check back on whether they have achieved those goals. It does seem logical that having such a sense of organization and accomplishment would help the students focus their thoughts better, though this is a matter for another study.

The third major difference among the teachers' plans was the more experienced teachers' (the intermediate and expert teachers') more apparent sense of class dynamics. Although the novice teacher was highly attuned to the students' needs, the more experienced teachers were more concerned with interactions among the students. This manifested itself in their concern over the assigned article's appropriateness. Both teachers proposed solutions to the possible tensions that might rise from a discussion of this article—removing the article from the plan entirely, or ensuring a "safe" atmosphere for discussion. It is not surprising that with more experience teachers would come to observe the importance of class dynamics in the success of a course. If a group of students feels negatively toward each other or toward the teacher, the students' outlook on the subject matter will likely be tarnished as well.

Overall, this study allowed the opportunity to look in on teachers' thought processes as they planned a class session, and to gain insight as to what considerations they make in these plans. All three teachers used similar processes to come by these plans. Teachers considered class goals, made decisions based upon their knowledge of their students, and explicitly referred to personal experiences when planning the sessions. They followed similar patterns in choosing activities—not only were the activities they chose similar, they followed a similar process of picking certain activities

based on certain rationale, allotting time for the activities, and checking students' comprehension based on the activities. Again, further analyses of the order of planning would help to further reveal the teachers' thought processes during the task.

Though the original problem was complex, the teachers followed similar paths to finding what they felt to be appropriate solutions. Possibly, the similarities were due to the explicitness of the task instructions. Perhaps each participant perceived the instructions' list of guidelines for course preparation as definitive for the purpose of this task, and thus did not think to write plans that varied from them substantially. Future studies should address this issue by giving the participants more open-ended goals for the task, thereby enabling the researchers to find out what personal guidelines teachers conceive on their own or consider the most influential factors in planning a class session. It may be that these self-generated guidelines largely overlap with the guidelines provided in the instructions, especially when it is considered that those guidelines were drawn from previous studies of teacher planning (Gatbonten 1999).

Or, it is possible that the similarities in class planning are in fact due to teacher education programs, and the apparent existence of expert/novice differences may indicate that experience and expertise are vital for the development of teacher planning skills as well. Future, more extensive studies would do well to further examine the strategies used by and the decisions made by teachers as they plan their lessons, to more fully explore realm of individual differences as well as the potential realm of expert/novice differences. Potentially, findings could be used to improve teacher training programs and to more effectively evaluate different teaching styles.

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