TEACHER RESEARCH

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This section of JRE was conceived as a space where educators could share their research on their practice. In a review of research on the relationships between knowledge and practice, Cochran-Smith and Lytle (1999) distinguished between three types of educational research. Knowledge *for* practice is traditional research by university faculty to be shared with teachers to improve their practice. Knowledge *in* practice is what is practical knowledge, or what experienced teachers know. The third conception is knowledge *of* practice, which integrates theory and practice. Cochran-Smith and Lytle develop the construct of "inquiry as stance," which is rooted in this third kind of knowledge, generated in inquiry communities, often engaging educators across contexts. They say, "We believe that inquiry as stance may offer promising directions for initiatives related to preservice education, professional development, curriculum construction/reconstruction, and school and social change." (1999, p. 251).

Each of the articles in this section brings to life this notion of inquiry as stance by illustrating how teacher research in a learning community can contribute to professional development. In the first article, "Teacher Educators Foster Whole Teaching" two university-based educators inquire into teacher education pedagogy as they study the teaching practice of their colleagues, drawing from a literacy stance that reveals their theoretical underpinnings. Their work offers creative insight on the practices of teacher educators, and is an insightful example of scholarship of pedagogy. In "Empowerment in Action: Action Research as Professional Development", colleagues from a K-16 collaborative illustrate how action research has become institutionalized in a public school context, contributing to professional development of the inquiry community. Many lessons can be learned from the story of how partners supported each other to transform the school culture to one that supports collaborative reflection as professional development.

The editorial board of *JRE* hopes to make teacher research an ongoing feature section. We invite those doing both school and university based research on their practice to submit articles for consideration to Professor Barbara Beyerbach, State University of New York at Oswego, Oswego, New York.

Cochran-Smith, M. & Lytle, S. (1999). Relationships of knowledge and practice: Teacher Learning in Communities. In *Review of Research in Education*, *24*, pp. 249-305.

Teacher Educators Foster Whole Teaching

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Teacher educators continually examine the relationships among theory, research, and practice, with the goal of helping pre-service and in-service teachers make these same connections for themselves in their own classrooms. They want their students to be able to think, read, write, and speak about how and why a certain educational theory manifests itself in the classroom, for example, or how and why popular teaching methods work well in some contexts and not in others. Although teacher educators continue to expect students to demonstrate this type of thinking, they are not always aware of or concerned about how prospective teachers come to develop these skills and abilities.

If the saying, "We teach as we are taught," is true, then teacher educators have the enormous responsibility of providing teachers with opportunities to develop and practice language and thinking skills to the point at which they can do the same for their own students in their own classrooms. Adopting a whole language standpoint may facilitate this process. The term "whole language" can be applied to a teaching and learning philosophy involving a focus on the learner and the natural ways in which he/she learns to speak, listen, read, write, and think, in order to make sense of, contribute to, and respond to his or her world (Goodman, 1986; Routman, 2000).

It is possible that the same principles can be linked with the process of learning to teach. "Whole teaching" is a philosophy of teaching and learning that stems from holistic language learning theory (Leu and Kinzer, 1999) or natural literacy learning (Geekie, Cambourne, and Fitzsimmons, 1999): that the learning and development of teaching skills in a meaningful, learner-centered context is more beneficial for both teacher and student than learning skills and concepts in isolation or outside of a real or simulated context. Teacher educators who implement whole teaching strategies create conditions in their classrooms that encourage the learner to examine the processes of teaching and learning in light of the products or outcomes of education. Additionally, these teacher educators regularly illustrate the principles and

processes of good teaching by modeling such practices. According to Blake (1990), the whole teacher:

> discards a clinical viewpoint and internalizes a personal stance. The clinical model of viewing kids is scientific, objective, detached, and impersonal. [It includes] extensive diagnostic testing, labeling, prescribed remediation, "scientifically" arrived at sequential steps, behavioral objectives, scope and sequence, standardized tests (based on a normal distribution curve), behavior modification, tracking by ability, a teacher-controlled institutionally administered program of language development (p. 21).

The holistic teacher sees the learner as a whole person and encourages each learner to explore his/her individuality through a focus on "pre-school literacy, process writing, process reading, and by reading and responding to literature, becoming a community of learners, and presenting implicitly moral codes of behavior through a total holistic classroom environment" (Blake, 1990, p. 28).

Since whole language practices have been encouraged now for over two decades (Shaughnessy, 1976; Holdaway, 1979), one might wonder why relatively few teachers are widely implementing them in the schools. When teacher educators visit student teachers or conduct in-service workshops for teachers, they inevitably meet teachers who claim that, philosophically, they agree with whole language principles and practices, but who cling to outdated practices which are not consistent with holistic language learning. One reason for this discrepancy may be that classroom teachers themselves have not witnessed good models of whole language teaching and learning and, as a result, have little confidence building such a program in isolation. To be successful, all learners need good models for learning (Vygotsky, 1962; Bruner, 1978), particularly when the skills and abilities to be learned are as complex and varied as teaching.

Researchers and practitioners have already begun to investigate these questions. Brazee and Kristo (1986) found that modeling whole language would likely influence students to adopt and explore these strategies. Others have identified a positive, significant relationship between the use of whole language strategies and reading ability of students taught in a university clinic directed by teacher educators (Osburn, 1983; Ramsey, 1985). In their delivery of a whole language inservice course, Prenn and Scanlon (1991) discovered that creating the same environment that they were teaching their students to create in their classrooms was an essential component in the success of their program. In fact, they claim that this modeling " ... encouraged us and our students to shift roles ... redefine our approaches to teaching and learning ... and re-examine our practices as readers and writers" (p. 198). This testimony clearly reflects the principles underlying whole teaching: both teacher and learner re-visit their thinking about teaching and learning, utilizing and developing their own language and thought processes as they express the evolution.

Cambourne's learner-centered ideals (1988) epitomize whole language theory and practice by emphasizing a natural language development process: we learn to read and write best as we learned to speak - naturally. Furthermore, he believes that in order to learn to talk, read or write, in the most ideal of circumstances, certain conditions must be present. Though many and complex, "These seven conditions stand out as relevant to all kinds of language learning (reading, writing, speaking, and listening) and are transferable to classroom practice: immersion, demonstration, expectation, responsibility, approximation, employment, and feedback" (Cambourne, 1988, p. 5). It is up to the classroom teacher to create conditions that will allow this natural growth to occur once children begin school.

The Study

In a year-long qualitative study that examined the teaching strategies of teacher educators, the researchers observed fine teacher educators, each teaching two different courses over a two-semester period. Two in-depth interviews were also conducted with each teacher educator.

Two important but little understood questions surfaced as a result of this investigation: Do teacher educators offer opportunities for students to think, read, write, and speak in ways that are meaningful and purposeful to their future careers as educators? What conditions best foster the types of thinking and learning necessary for teaching?

Results and Discussion

The following is a discussion of how Cambourne's ideal conditions for language learning are translated into practice. These conditions facilitate the thinking necessary for understanding and articulating the teaching process.

Condition I: Immersion

From the moment they are born, ... children are immersed in a "language flood" [as] proficient users of the language culture they have been born into literally bathe them in the sounds, meaning, cadences, and rhythms of the language they have to learn. This language that continually flows around them is always meaningful, usually purposeful, and more importantly, whole (Cambourne, 1988, p. 6).

Like the process of language development, the process of learning to teach is one that involves a culture all of its own, its members learning, gradually, to assimilate into it in a meaningful and purposeful way. The teacher educators in this study surrounded their students in the language culture called "teaching" in a variety of ways.

Jay. In his graduate level Reading course, Jay encouraged his students, most of whom were classroom teachers, to create their own culture or community from Day One by participating in a "give-to-get" goal-setting exercise in which they articulated what they would like to get from

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the course and then what they were willing to give in order to get those things. Posters with "gives" and "gets" filled his classroom walls, as did a large poster entitled, "Welcome to the Adventure," a display of all of their signatures, almost a pact of sorts, or an initiation rite that would serve to bond and define them as a group from the beginning. Strong feelings of trust, support, and commitment permeated the classroom through both verbal and non-verbal behavior by the end of Jay's first few nights of class.

During one lesson, Jay needed to regain control over his class during small group work. Instead of turning the light switch on and off or shouting over the students' voices, Jay recited one of his favorite poems, Robert Frost's *Stopping by Woods on a Snowy Evening*, until all eyes and ears were glued to his powerful, soft-spoken words. His vocal intonation and manipulations seemed to create an almost hypnotic state for the listener, and when he ended the piece, they all sighed, then sat back in a relaxing, reflective moment of silence. A true sense of comfort and belonging prevailed.

Sue. Unlike Jay, Sue enticed and absorbed her undergraduate Science Methods students in the teaching of science through a high degree of organization and structure. On one particular day in Sue's class, one would not have had to look very far or long to discover that the topic was electricity: Sue flashed a cartoon about electricity on the overhead projector, but took no time from class to refer to or discuss it; packets of information on electricity and baskets of necessary materials (pens, markers, scissors, etc.) dotted each lab table where teams of students worked; batteries and wires lay in front of each team waiting to be touched; the "puzzler", a hands-on activity for students to do independently on their own time, neatly decorated the back wall. That week's puzzler was a two-potato alarm clock that actually worked. It was up to the students to explain how. The concept of electricity completely engulfed Sue's classroom and motivated students to enter the world of science and science teaching.

Condition II: Demonstration

Children, in the process of learning to talk, receive thousands and thousands of demonstrations (models or examples) of the spoken form of the language being used in functional and meaningful ways. The child sitting at breakfast hears a stream of sounds emitted from his father's mouth-and the sugar bowl is passed across (to Dad). This kind of demonstration of the conventions which are used to express meanings is expressed over and over again ... Through them the learner is given data which enables him to adopt the conventions that he needs to use in order to be a speaker/comprehender of the language culture ... (Cambourne, 1988, p. 7). Each of the teacher educators in our study demonstrated the same teaching processes and practices he/she believes prospective teachers should implement in their classrooms.

Carmi. Carmi modeled teaching by frequently placing himself in the role of the elementary school teacher and asking his students to adopt the role of elementary school children. As early as Day Two, Carmi scanned his classroom full of Education students (25 or so) and impressively stated everyone's first name; he distributed a graphic organizer to students, demonstrated the learning process with that tool, then encouraged his students to use advanced organizers to teach reading. "Who's the best detective in here?" Carmi inquired before he took students through a reading game that illustrated the problem-solving nature of the reading process. Finally, Carmi demonstrated the process of teaching using a story map with a piece of children's literature before he assigned a similar activity to his students to complete. In each instance, Carmi exposed the thinking behind his teaching so that students could make sense of his choices as they experience them as learners, then as teachers of reading.

Pam. Pam modeled:

"... what I want them to do with their own students. I model parent interviews (as mock interviews) where I might be the parent, since in the first part of the course they have to make contact with and interview the parent ...We talk about how we can make the students and parents more comfortable rather than threatened. The whole time I'm doing this, I'm thinking, 'These students feel threatened.' So then I attempt to make them more comfortable about what they already know about reading."

As her graduate students worked with young readers in the schools, they returned to Pam's class to share their findings. By the way they revealed their case studies, Pam could see the thinking that went into the decisions they made; using their knowledge and experiences, she formulated and asked questions that made them reconsider their instructional choices. When one tutor was bewildered about what to do with her tutee, she asked Pam for an idea, to which Pam replied, "What do you think?" And the student analysis continued. Rather than providing possible explanations and answers of her own, Pam showed students how to think for themselves, as well as encourage their future students to use their resources, think and find solutions independently.

In some cases, Pam literally stepped into the role of tutor with a young reader to show her students how to work through a particularly difficult situation. Later, in the college classroom, they analyzed what happened and Pam verbalized her rationale for the instructional choices she made.

Sue. As the Science Methods professor in the department, Sue had what she considered to be one of the toughest jobs there is: teaching the content of science as well as teaching the teaching of science. Sue advocated the teaching of science "BACKWARDS," as many posters advertised in her science lab. In order to get this point across to her students, Sue herself modeled lessons which "teach Science backwards," in other words, inductively. She followed a teaching model called the learning cycle (Atkin and Karplus, 1962), which begins with engagement, moves to explanation, then finally elaboration. Sue allowed her

students to conduct their own testing using electrical equipment to discover how batteries and wires produced electrical energy (engagement). She then led them in a discussion of what they found and why (explanation). Next, she asked them to apply their learnings in a written assignment on electricity (elaboration). As part of the assignment, students were required to analyze specifically how Sue's lesson paralleled the learning cycle model. First they learned the science content, then they learned about the process of teaching that content.

Barb. Demonstration and analysis of demonstration were a part of Barb's repertoire of teaching strategies as well. First, Barb immersed her undergraduate General Methods students in a model lesson on the concept of buoyancy that opened with a sinking/floating experiment. After an analytic discussion of the science concepts demonstrated through the lesson, Barb asked, "What happened here?", requiring students to look more objectively at the process they just experienced from a pedagogical point of view. Barb probed, "What would have happened if I had come in here and for my anticipatory set stated that we were going to start a unit on buoyancy and that we would read about it and talk about it and if you were good, maybe on Friday we could actually try an experiment on it?" The groans from the undergraduates were evidence of the fact that Barb's lesson was so successful because she provided students with an experience first, using students' explorations to feed into an analysis and explanation of the phenomena. Like Sue, Barb explicitly modeled good science teaching, then asked her students to "unpack" it. This strategy was quite common in Barb's teaching.

Condition III: Expectation

All parents expect their children to learn to talk. Expectations...are very subtle forms of communication to which learners respond. We "give off" expectations that our children will learn to walk and talk, and they do, even though it's quite often painful...and very complicated (Cambourne, 1988, p. 7). Teacher educators who want to create an optimum learning experience for their students will also communicate a set of expectations that are high, yet that indicate that all students are capable of learning. In this case, the learning is teaching. The teacher educators in this study sent the message that, although complex, teaching is something at which they expected their students to succeed.

Barb. Once students completed the experiment on buoyancy, they engaged in a lively discussion of an array of disjointed ideas, insights, and observations as an explanation for what happened during the experiment. Consequently, Barb requested, "Who can put this all together in a coherent statement?", encouraging and expecting students to be able to synthesize and articulate their new understandings based a given set of ideas. Had Barb any doubt about their ability to do so, she may have articulated a synthesis statement herself or asked, "Can anyone put this all together in a coherent statement?"

In the same course, Barb taught a lesson on multi-cultural issues in education in which she strongly urged a certain standard of teaching as she communicated her own and the state's expectations of student attitudes once they are in the schools:

> The New York State Compact for Learning has as a central assumption ... the belief that every child can learn ... those with disabilities, fetal alcohol syndrome, crack addictions, those from single parent families ... Teachers are encouraged to look at their role as being a teacher to all children ... You're a powerful model ... Kids will take their cues from you.

Barb and Sue. Following a learning cycle model of teaching (Atkin and Karplus, 1962) (i.e. using engagement, explanation, and elaboration in that order) in itself communicated a certain expectation to students about what they were perceived as being able to do on their own. Both Barb's buoyancy and Sue's electricity lessons began with the learner engaging in a meaningful experience in which they predicted or hypothesized, tested out their hypotheses, then drew conclusions based on the data they collected. With little teacher guidance, students moved with ease and enjoyment through relatively complex thinking tasks, before the teacher had done any of the explaining. Both Barb and Sue then guided a discussion around the findings and conclusions that resulted, finally setting students up to independently elaborate on the significance of what they had learned and to apply it to another situation.

The end result? Students became researchers, discoverers, and independent problem-solvers who gradually moved further away from reliance on the teacher for direction and guidance. By setting and communicating high expectations to their students, these teacher educators began to see their role in the classroom changing from provider of information and instruction to facilitator of a learning process.

Condition IV: Responsibility

"When learning to talk, children are left to take responsibility for what they learn about their language ... let the child decide which set of conventions to master" (Cambourne, 1988, p.7). It is only logical to assume that if talking, reading, and writing are best learned when the language user is responsible for the scope and sequence of the learning, that teachers, too, will achieve mastery of skills and professional competence through different stages, at their own pace, and in a way that works best for them. In both cases, the learner will "ultimately arrive at the same destination but through different routes" (p. 5). Each of the teacher educators in the study utilized strategies in his or her teaching that allowed for students to take responsibility for their own learning.

Jay. During one of his graduate Reading classes, Jay's students were reading aloud their original pieces of writing and receiving feedback from classmates when Jay stopped

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the class to ask a question: "Would you rather keep reading your pieces or engage in a response group activity that involves assessing how response groups have been working so far? Think about it and I'll get back to you for a vote." The class responded overwhelmingly to continue reading pieces aloud and giving feedback to writers. So they did. Later, in a follow-up interview, Jay commented that he was pleased with his decision to allow students to make the decision about how to proceed:

> I didn't really have a preference. I knew the choice they would make would be better than the choice that I would make. The reason I established that particular option was a result of some feedback ... students had given me earlier. so I wanted to be responsible and accountable to them.

On many occasions in Jay's classroom, one might find him simply sitting amidst students with his arms folded in front of him, pausing for students to initiate the next part of the lesson. "I rarely use anything of mine," said Jay, who also realized that not all of his students were comfortable with his less formal, less structured, student-centered approach to teaching and learning. After reviewing the agenda for each class period, Jay inevitably invite students to respond to the agenda: "Is there anything I missed?" or "What else needs to be taken care of?" were common in Jay's introduction to each lesson. He wanted to be certain that students had an opportunity to voice comments, questions, concerns, or suggestions related to their classroom. A few more traditional learners looked to each other as if they had never been asked these questions before. What is probably true is that they had never before been given this degree of power and responsibility over their own learning.

Often at the beginning of Jay's Integrating Reading and Writing Instruction course, students requested, "When are you going to tell us how reading and writing are integrated?" to which Jay replied, "I'm not." Later in the semester they ceased asking such questions, Jay claimed, because "They knew it wouldn't do any good. Rather...I asked them back, 'Why are you asking the question?' 'Where does the concern come from?' 'How can you integrate reading and writing?'"

Carmi. At the beginning of one of his graduate courses Carmi set up groups of three students each and explained to students that these were literally "conversation groups" that would provide them with an opportunity for on-going verbal dialogue with their peers throughout the semester. They were encouraged to dialogue with their conversation group members at any point during class time, especially when Carmi or other students were leading the class in a discussion, lecture, or activity which stimulated thoughts and questions that they might not want to raise in the larger group. Interestingly, students were rarely observed interacting with one another in these groups the first few weeks of class; in fact, they looked strangely at one another as Carmi explained his rationale behind the strategy. However, by the end of the semester, Carmi explained, the groups "became quite popular because they were completely student-generated."

Condition V: Approximation

When children are first learning to speak, most parents do not criticize them for not pronouncing their words exactly as the parents would. "Young learners of the oral mode... are not expected to display...adult competence from the beginning. Parents actually reward children not just for being right, but for being close" (Cambourne, 1988, p. 8). It is expected that beginners will only approximate standard language conventions until the point at which sufficient modeling, practice, and development have taken place for the skills to be mastered independently by the learner, with no assistance from a more competent speaker. Thus, we reward closer and closer approximations of the "real" thing.

This is also the process students of Education pass through in a training program as they learn new skills and knowledge and begin to apply them. Rather than focusing on correctness, it is the teacher educator's responsibility to encourage and recognize approximations of good teaching behaviors, attitudes, skills, and understandings. Unfortunately, many college Education classrooms can only provide approximations, or simulations, of the real teaching and learning contexts that exist in the public schools. However, the teacher educators we studied have created contexts for students which allow them to develop, nurture, and practice their emerging teaching skills in meaningful ways.

Sue. Sue and her 120 pre-service teachers conducted a two-day "College for Kids" instructional project in which they designed, planned, and executed 24 different lessons involving hands-on science. Children in grades K-6 were invited to the campus for one week during their spring recess, two days of which Sue immersed her students in the process of teaching actual children. This was a prime opportunity for Sue to observe her students in the act of teaching science and to see the extent to which they applied what they had learned in her course. What Sue realized from this project and from observing her students peer teaching in the college classroom is that learning about teaching science and actually teaching science are two different things altogether. While the majority of her students may have fully understood and were able to identify the components of the learning cycle model, for example, the extent to which they could implement this model in their own teaching varied greatly from student to student.

Pam. By the end of the semester in Pam's graduate Reading course, students were still asking her very significant questions about which teaching strategies to use with their reluctant or unsuccessful readers in the clinic Pam had set up. As they inquired about a particular strategy and whether or not they should use it, Pam suggested that they become the "expert" in that instructional strategy and that they bring in a model lesson using that strategy to demonstrate in the next class. Through Pam's suggestion, students were able to follow up on their own need and interest

area in diagnostic reading, take advantage of the opportunity to practice a teaching strategy in a non-threatening environment, receive feedback on the process of modeling that strategy, and to not only be exposed to those strategies Pam used in her own teaching, but become informed of strategies used by other reading specialists. The benefit to Pam was that this student modeling gave her another look at how her students were understanding and developing their role and skills as reading teachers.

Carmi and Barb. In their undergraduate General Methods course, Carmi and Barb included an active teaching component in which each student was responsible for planning and teaching one 15-minute period of instruction that normally would be taught by the professor. Planning was done collaboratively between students and the professor so that students could be guided through a logical planning process. After the student taught the lesson to his/her peers, the class as a whole "unpacked" or reflected orally on what went well in the lesson and what suggestions could be implemented to improve the lesson. The primary focus during this "debriefing" session was on praising the active teacher for specific aspects of the lesson that seemed particularly effective (e.g., the introduction or closure; use of a motivating activity; evidence of good organization and/ or thorough preparation, etc.) After debriefing, the active teacher reflected in writing at the bottom of the lesson plan regarding the teaching episode, providing alternative ways of proceeding and the possible consequences of those modifications. If appropriate, they were encouraged to include a reference to the modifications they would need to make if their lesson were taught in an actual elementary classroom.

Carmi and Barb have also piloted a program in which Methods students were placed in a practicum classroom (as part of their Methods course), with the intention of returning to that classroom with the same cooperating teacher the following semester for a student teaching experience. Furthermore, the Methods professors would follow the same group of pre-service students through a semester-long practicum and at least eight weeks of student teaching in order to track their progress, to provide increased and consistent support for the student, and to make more informed recommendations regarding the students' growth and development.

Condition VI: Employment

"Plenty of opportunity to use the medium is provided when learning to talk. We don't restrict our children to two twenty-minute periods per week to employ the conventions of spoken language, and prevent them from practising at other times "(Cambourne, 1988, p. 9). Similarly, teacher educators can provide novice teachers with the same chances to employ their teaching skills in both the college classroom and in the elementary classroom. The utility of teacher education courses is a primary concern to holistic teacher educators who want to create future "whole teachers." All of the teacher educators in this study included a focus on utility in their respective classrooms.

Pam. Perhaps more than any other in this study, Pam's Diagnostic Reading course illustrated ways in which teacher educators can focus on usefulness in their classrooms in order to make the learning experience more meaningful to the students. It was a practicum course in the truest sense of the word in that Pam offered her new reading diagnosticians regular opportunities to interact in real teaching and learning situations with struggling readers. Students were able to independently test out their theories about reading and reading instruction with young children, then return to a forum of ideas exchanged among many who had encountered similar experiences. Once back in the college classroom, Pam inquired, "Why do you think this method is utilized so much in the schools?" as a springboard for discussion on the value of a particular strategy observed in the field.

This exchange of ideas between the elementary and college classroom was both theoretical and practical. As students worked individually with their tutees, they brought data from their cases in for analysis with Pam. Pam reflected:

> I'm not looking at one particular way of dealing with the kids ... I look at the whole picture and even if I choose to do something differently, it doesn't mean that what they're doing is wrong ... Part of their job is convincing me that what they are doing makes sense and that everything they do is for a particular reason.

Since Pam accompanied her tutors during some clinic sessions, she had the benefit of knowing the relationship between the tutor and tutee and also some background information on the reader. With this information, Pam could provide more useful and informed recommendations during analysis. Many times it was the other tutors who provided each other with the most helpful and useful feedback regarding their cases.

Carmi. Carmi's lessons exemplified Cambourne's condition of employment in that he frequently provided specific strategies for pre-service and in-service teachers to employ in their own classrooms. "The DRA is a typical, traditional reading lesson. This is what I did when I taught 4th grade. Let's find out when it might or might not be the most useful method."

In one class, Carmi modeled a story mapping activity to show students what a story map is and how it influences reading comprehension, and to demonstrate how to use it with a group of learners in their own classrooms. After considerable discussion of the activity, Carmi asserted, "Put yourself in the role of the classroom teacher. How would that discussion that we just had have helped students' comprehension of the story?"

When one of his students asked Carmi what to do if she wanted to become a whole language teacher, Carmi used this student's immediate concern as a teachable moment: "I want to be a whole language teacher. What methods will I be using? What will my classroom look like?" What followed

was an in-depth conversation that compared and contrasted a skills-based model of reading instruction with the principles and practices of holistic language learning. In a follow-up interview, Carmi shared his thoughts about whole language:

> Every time I talk to a teacher who says, "I am now doing whole language" ... they are experimenting, they are creating whole language. They really are. It's happening in the classroom. And tomorrow's textbooks will be changed because of what they are doing.

Carmi seemed very connected to what was happening "out there in the real world" of teaching, a connection he relied on and utilized for examples of good and poor teaching in his college courses.

In his undergraduate course, Carmi made frequent references to the practicum classrooms his students were involved in for part of the semester. He modeled, for example, a lesson which employed the inquiry training model, then asked, "Can you do this in your practicum classroom? What would it look like?" Likewise, Carmi presented a lesson that outlined the concept attainment model of instruction, then asked, "Would kids enjoy this? Why? What would you need to do differently with children?" After a student read aloud a popular piece of children's literature, Carmi requested, "Let this be your classroom. Write three questions that you could ask kids about this book," as a way of opening his lesson on effective questioning skills. In each instance, Carmi stimulated then facilitated important discussions between himself and his students regarding the application or usefulness of a particular teaching strategy or tool in an elementary classroom.

Condition VII: Feedback

As educators, we need to concern ourselves with the process one passes through in order to get from one developmental stage to another. In the process of learning to speak, for example, how do immature learners arrive at "That's a cup" after saying, "Dat cup" ? "Adults and older siblings who teach young children give them feedback of a very special kind" (Cambourne, 1988. p. 9). In response to the child's, "Dat cup", one might reply, "Yes, That's a cup," communicating to the child that the message has indeed been received, and expanding the form of expression to model the conventional way of saying the same thing. The approach is non-threatening and meaning-centered, which facilitates the learner's rising to the next stage of the learning process. "Immature attempts at communication would continue until the child decided to change" (Cambourne, 1988. p. 9). What types of feedback are provided in the classrooms of our future teachers? How do teacher educators facilitate the growth of each prospective teacher through feedback? Participants in this study used feedback in many ways and for many different purposes.

Jay. The feedback process was all-important in Jay's classes. It seemed central to the learning that took place there. Jay regularly urged students to provide him with on-

going feedback about the course and any individual part of it. "I'm glad you are asking me what we are doing if you are unsure," Jay reassured a student who was confused about what he was explaining to the class. Jay also provided students with ample opportunity to practice giving and receiving feedback from himself and from peers. In fact, each student writer in this class had the chance to read an original piece of writing aloud and to receive written and/or oral feedback on it.

During one reading/writing class, Jay asked student writers to comment on the feedback process they had gone through in the previous class when they received written and oral comments from peers regarding their pieces of writing. Jay justified having them give this "meta-feedback" so that each writer would "feel validated about the ideas they communicate in their pieces." By doing this, students could articulate a summary of the comments they received about their writing.

Frequently, long moments of silence pervaded the room after a piece was read aloud or after a listener responded to a piece of writing. Some commented about the writer's use of language or mechanics; others referred to or asked questions about the topic or ideas brought out in the piece of writing. These moments of reflection seemed to have become almost a ritual created by the community of writers who shared strong common beliefs about reading and writing processes.

Before each new class period, Jay collected an index card from each student called a "share" on which the student had recorded something he/she wished to share with him or with the rest of the class about the readings, the assignments, the class sessions, or anything else that the student was thinking about in relation to the course. Jay offered during an interview that he used information from these shares each week to modify his teaching practices and to fuel upcoming lessons to make them more student-centered.

Sue. As in Jay's classroom, the feedback in Sue's classroom served a dual purpose: to inform her of her students' perspectives, thus helping her decide what instructional changes to make in her course, and also to help her move students to a new height or stage in the learning process.

Sue administered a midterm evaluation of her teaching and of the Science Methods course itself. Information was used to modify her course structure. After teaching her science methods course for the first time, Sue realized it was the midterm evaluation that helped her the most in modifying her assessment practices to better meet the needs and abilities of her students

Since she had a strong interest in whether or not her students were actually using anything from her course, Sue conducted a survey of student teachers. The majority of student teachers responded that, as a result of taking Sue's course, they had a more positive attitude towards science and science instruction; that her course provided practical and useful information about how children learn science; that it provided realistic and useful ways to plan and teach

good science lessons; and that they actually used much of what they learned in Sue's course in their student teaching or practicum placements.

As students read about science and science teaching issues, experimented and discussed science concepts, and thought about what all of this had to do with elementary school children, they kept a journal of reflections which Sue collected, read, then responded to. Using a reflective teaching model, Sue asked her students to think like students, then to step back from that role and to assume the role of the elementary school teacher. They were expected to reflect not only on what happened, but also on how it happened so that they could demonstrate an understanding of the thinking processes necessary for problem-solving. Some of the journals included almost as much of Sue's writing as the students' writing. Examples of higher-level responses were modeled in Sue's handwriting next to a student's more literal-level response.

Implications and the Need for Further Research

This study has outlined and explained the seven conditions that Cambourne (1988) believes facilitate optimal language learning, drawing clear parallels between the processes involved in language learning (speaking, reading, writing, listening, and thinking) and the processes of learning to teach. Furthermore, it described in detail the ways in which teacher educators taught using conditions which foster holistic literacy learning. These researchers believe that if whole language elements do, indeed, facilitate literacy development, and teaching is a language event, then it is only reasonable to assume that these same conditions would also be most favorable for the effective development of holistic teachers.

The five teacher educators studied demonstrated a wide variety of whole teaching behaviors that greatly fostered the learning of teaching processes. Since learning context seems to be a variable in the teacher education classroom, then perhaps teacher educators need to look more critically at their own classrooms to discover some explanations for how their students are understanding, developing and nurturing the processes and skills involved in learning to teach. These are the contexts that set the stage and prepare students for future endeavors and assimilation into the profession. How might one describe this context? What conditions are present?

Teacher educators are the very models prospective teachers need to witness as they develop their teaching philosophies and strategies. Teachers educated in a program that follows Cambourne's model will themselves adopt a more innovative, student-centered approach to teaching rather than use models that may be inconsistent with their beliefs. However, further research is needed to ascertain this relationship. Another in-depth qualitative study on student teachers and inservice teachers who have been educated by whole teacher educators might be done to determine the extent to which new teachers create the same conditions in their classrooms that are known to greatly foster the development of language and thinking skills in a learner-centered environment.

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