

Anthropology, Culture, and Research on Teaching and Learning: Applying What We Have Learned to Improve Practice

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We examine the role of culture—anthropology’s essential concept—in teaching and learning. After providing a brief overview of the application of anthropology to research on teaching and learning, we examine various studies that demonstrate how culture can be understood and used as a resource for teaching and learning. In particular, we focus on the growing body of research that positively exploits, scaffolds, and links productive community and cultural practices, particularly those of ethnic minority communities, to classrooms. We then present a theoretical framework and rationale for a current research project in which an after-school program for elementary students is developed that can serve as pedagogical laboratories and professional development community sites for inexperienced teachers as well as research sites where various issues of teaching and learning can be examined. At the heart of this project is the linking of inexperienced teachers with master teachers who have demonstrated success in teaching culturally diverse students in urban schools. Preliminary results that document children’s academic achievement and teachers’ improved performance are presented from the 1st year of the project.

In every society, certain groups of students do well in school, while others do not. In this country, these groups are often children from racial/ethnic communities that are culturally different from mainstream communities. What are the reasons that so many students from these communities fail in school, while mainstream students generally succeed? What are some of the

explanations that scholars have offered to explain this situation? What is the relationship between anthropology, culture, and research on teaching and learning? Finally, what are some of the solutions that have been proposed to address the problem?

When compared with the history of educational research on teaching and learning, the application of anthropology to research on teaching and learning is recent. For the most part, both historically and contemporaneously, psychology, as the parent discipline of education, has dominated the study of teaching and learning. Psychological approaches to studying education have been especially problematic in their views of students of color, inasmuch as they have tended to view these students negatively along a continuum of inferiority that has ranged from assumptions of genetic inferiority to those of cultural deficit (Bereiter & Engleman, 1966; Hernstein & Murray, 1999).

It is thus not surprising that anthropologically informed studies of teaching and learning have had difficulty in gaining a foothold in education. Although such studies have been the centerpiece of some educational journals since the 1970s—the *Anthropology of Education Quarterly*, for instance—it was not until 1987, when the *American Educational Research Journal* introduced the topic of anthropological and ethnographic research on education, classrooms, and teaching and learning that anthropology and its essential concept—culture—began to appear more regularly.

ANTHROPOLOGY, CULTURE, AND RESEARCH IN EDUCATION

Anthropology is an evolving discipline that throughout its history has offered a number of insights into human nature and the concept of culture. One of the earliest definitions of culture is “that complex whole which includes knowledge, belief, art, morals, law, custom, and any other capabilities and habits acquired by man as a member of society” (Tylor, 1871/1958, p. 1). Various perspectives are used in the study of culture—functional, psychological, cognitive, and linguistic approaches are all commonly used. These different perspectives are not mutually exclusive, however, and regardless of the perspective one holds, culture is taken for granted, can be studied holistically, and is a dynamic process. On the one hand, culture produces meanings, guides actions, assigns identities, makes particular events possible, and structures social relationships and power relations among people. On the other, people produce culture and transform it. Whereas culture, race, ethnicity, and nationality are intertwined in complex ways, culture is not coterminous with any one of these constructs.

What constitutes culture is neither uniform nor agreed upon. Rather the perceived value of cultural forms and their functions are often highly contested. Such conflict is, for example, evidenced in the way certain aspects of urban Black culture have been appropriated into American mainstream culture while simultaneously being viewed as inferior.

To make anthropological constructs useful in research on teaching and learning, a researcher must undertake several tasks. First, the researcher must identify exactly what is shared about culture. A researcher will have to ascertain what things symbolize and how they become significant. A researcher will need to determine when, where, and by whom ideas are deemed significant, who contests assumptions about what is shared, and its significance and meaning. Finally, the researcher will have to decide whether to deal with the macrosituated or the microsited aspects of culture, although increasingly the challenge is to find ways to link the two.

For educational researchers, the task is more complex than merely identifying the putative culture of a particular group because it is impossible to freeze a culture at a particular moment and assume that what one has learned about that group is its culture. Rather, the challenge is to determine how the events, speech routines, and cultural practices are a part of ever-evolving sets of cultural practices. Hence, researchers need to ascertain how the cultural dynamics of a particular group interact with those of the broader community and to investigate the consequences of those dynamics, both for the education of those in the group as well as for those with a stake in their education. For educational researchers, particularly those seeking to apply what they learn in the classroom, merely asking questions about the meaning and consequences of certain cultural practices is insufficient. The task becomes determining which of these practices, if any, might be useful in facilitating change. Any decision—from choosing which perspective to employ or intervening in existing classrooms or other institutional structures—is necessarily political.

Employing anthropological ideas in educational research has challenged certain time-honored assumptions in studies of teaching and learning. Anthropology has helped educators cultivate a new awareness of cultural diversity and its effects on the teaching and learning process. Anthropologists have analyzed how ethnocentrism permeates teaching practices and influences teacher–student and student–student interactions. Researchers who examine the contextually and culturally situated nature of language use often point out that the classroom, far from being a neutral setting, is saturated with specific cultural and communicative norms. From a methodological standpoint, anthropologically based studies of teaching and learning have brought new methods to the educational enterprise, among which participant observation, long-term fieldwork, and an emic

perspective (i.e., working from the participants' points of view) are especially prominent.

CULTURAL CONGRUENCE, CONFLICT, AND DISCONTINUITY

What follows is a brief historical sketch of some of the ideas that have shaped one field within the anthropology of education, a field often referred to as cultural congruence, conflict, and discontinuity. This field of inquiry considers the relationship between schools and the community in which students receive their primary socialization. Research in this field analyzes the cultural practices, especially the ways of speaking and interacting that students learn at home and bring with them to school, and contrasts them with dominant school practices to unearth the ways in which community practices are recognized and accommodated or devalued and discredited.

Studies of cultural congruence, conflict, and discontinuity developed largely in response to educational psychologists who, since the 1960s, have advanced the idea that particular groups of students failed in school because they were culturally deprived, deficient, or disadvantaged. These psychologists grounded their research in the culture of poverty hypothesis and came to be known as cultural deficit theorists (Valencia, 1997).

This hypothesis maintained that some groups remain persistently poor because of cultural pathologies, deficiencies, and defects that are transmitted from parents to children. One of the earliest works to denounce this hypothesis was *The Culture of Poverty: A Critique* (1971), a book edited by the anthropologist Eleanor Burke Leacock. This work made clear that children were often classified as culturally deprived simply because their families and communities did not provide them the kind of experience typically associated with White, middle-class families and communities. Many other studies soon followed that pointed out further limitations in the cultural deficit hypothesis (e.g., consult Cazden, John, & Hymes, 1972). Despite compelling arguments to the contrary, this hypothesis has been difficult to dislodge and continues to be heavily represented in the research literature as well as in the conceptions that teachers often hold about students of color.

Language, particularly how people use it in different contexts to accomplish culture-specific goals, was often a focus of the research that criticized the cultural deficit hypothesis. Two reasons for this particular focus were the cultural deficit theories had focused on language, and language is a ubiquitous feature of classrooms. One of the most influential studies was undertaken by William Labov, whose seminal sociolinguistic study, *Language in the Inner City* (1972), demonstrated that African American

English (also called Black English or ebonics) was a rule-governed and systematic language variety. Concurrently, John Gumperz and Dell Hymes (1972) were developing the theoretical framework for ethnography of communication, a field of study that examines the nature and function of communicative behavior in the context of culture. Grounded in the view of culture promoted by Clifford Geertz (1973) that emphasizes the meaning of what people do, this research focused on how language is used in particular contexts to interpret meanings, construct identities, and to sustain relationships. Hymes (1974) challenged Noam Chomsky's "scientific" study of language—an analysis of language units to determine the rules by which these units are organized—that had dominated the field of linguistics. As an anthropologist, Hymes argued that it was impossible to understand language without reference to its cultural underpinnings and that parsing only linguistic features without investigating the ways that different groups of people use language in their everyday life was insufficient. He thus reconnected linguistics to culture and strengthened the educational focus of linguistic anthropology, one of the four major fields of anthropology.

CULTURE IN LEARNING: A SURVEY OF SELECTED RESEARCH

As mentioned previously, the early use of culture as a construct in educational research focused on pathology. Researchers attempted to determine the risk factors associated with special groups such as African American children and then to design formal programs to minimize or even eliminate various deficits. In recent years, researchers have attempted to move away from the deficit model, focusing less on culture as a disadvantage and more as a strength that individuals deploy strategically. Despite this paradigm shift, aspects of the old paradigm still remain in much of the educational research about African American students. It is worth noting, however, that despite a move toward viewing culture as an asset, very little research has investigated exactly how culture can be positively used in the classroom. In fact, what we have learned from over 30 years of research on African American English has not been widely mirrored in practice (Foster, 1992).

STUDIES OF LANGUAGE AND LITERACY LEARNING

Various studies have provided evidence that features of African American English may be useful in helping certain students become literate. These

studies, which have been conducted at various levels of education, can be divided into three categories:

1. Naturalistic studies of classrooms have analyzed how teachers employ features of African American English during instruction and have documented the effects of such language use on student achievement.
2. Other studies have examined how mastery of particular discourse patterns are related to literacy development.
3. A few studies have identified particular features of African American English and through planned interventions have systematically applied these features to instruction.

A brief review of this research follows. One of the earliest naturalistic studies analyzed how African American English-speaking students in 14 first-grade Oakland, California, classrooms were taught to read (Piestrup, 1973). Piestrup documented four approaches to reading instruction. One of the approaches, labeled Black Artful, stood apart from the other three because it embodied many of the stylistic features that characterize verbal art in African American communities, such as call and response, varied pace, rhythmic language, repetition, and creative language play. Students taught with this style not only achieved statistically significant higher reading scores on standardized achievement tests but also were also more likely to code switch appropriately.

The positive contribution of creative language abilities to reading achievement is evidenced in another study undertaken more than a decade later, which demonstrated that reading comprehension was higher among African American students who were proficient in sounding, playing the dozens, capping, signifying, and other verbal routines commonly used by African American adolescents (Delain, Pearson, & Anderson, 1985). This study did not focus on teacher behavior, but when it is viewed along with the Piestrup study, it provides some evidence that students' proficiency in African American discourse styles can become a source of reading proficiency.

Although differing in focus and purpose, Sola and Bennett (1985) conducted three studies of secondary and postsecondary classrooms in which African American English discourse styles figure prominently. They describe several teaching styles in an East Harlem high school, with particular focus on the distinctly black communicative style of an African American teacher. They concluded that "writing instruction in school is used to establish 'relations ... among people and cultural traditions'" (Sola & Bennett, 1985, p. 89) that can contribute to student achievement.

In research similar to that reported by Sola and Bennett (1985), Foster (1987, 1989, 1995) analyzed the discourse of an African American teacher

and its effect on predominantly African American students at Regents Community College. Working within the framework of performance theory, she shows how various performances serve a tripartite function: They convey cognitive information, express speakers' attitudes, and establish and maintain social relationships (Cazden, 1988). Foster documents how the teacher shifts between a mainstream style and African American performances, with particular attention to the effects of the latter on students, who, as active coparticipants, were better able not only to retrieve the information encoded in performances but also to interpret it appropriately.

In a teacher-research study, Meier (1996), a community college teacher, described how she helped students become aware of the rhetorical strategies they use in their everyday talk, strategies also present in the speeches of public figures such as Malcolm X and Martin Luther King. As students became aware of the various strategies—rhyme, rhythm, repetition, parallelism, analogies, chiasmus, the use of opposites to make a point, and the use of declarative sentences for dramatic effect—in their own discourse and in public speeches, they gradually incorporated them in their own writing and thus became more powerful writers.

In an ongoing program of research, Lee (1991, 1993) has attempted to link rhetorical features in the speech events of the African American community to literary language to help students develop skills in literary interpretation. One example, she provides, is the chorus to the song, *The Mask*, recorded by the Fugees, which is well-known by students:

M to the A to the S to the K,
Put the mask up on the face just to make the next day.
Brothers be gaming, Ladies be claiming.
I walk the streets and camouflage my identity.
My posse Uptown wear the mask.
My crew in the Queens wear the mask.
Stick up kids with the Tommy Hil wear the mask.
Yeah, everybody wear the mask, but how long will it last?

According to Lee (2001), students readily understand that the song's description of the various masks that people wear to enable them to survive is not referring to a physical mask but is rather a metaphor for the various personae or public identities an individual presents to others. Lee's research has shown how to enrich the connection between the cultural models and linguistic structures in school with those employed in nonschool settings.

Mahiri and Sablo (1996) analyzed the nonschool literacy practices of two secondary school students to illustrate how these practices might be used in the classroom. Their analysis of student writing revealed many of

the rhetorical elements of African American discourse style highlighted as critical elements in studies by others—call and response, signifying, figurative language, play with homonyms, word play, the use of indirection (Morgan, 1991), as well as experimenting with and fashioning new words for expression (Foster, 1987, 1989, 1995; Hollins, 1982; Piestrup, 1973). Mahiri (1998) claims that teachers should not only pay attention to African American culture—perhaps the principal influence on youth culture in this country—but also draw on such culture as resources for school curricula and make a conscious and continuous effort to link learning to students’ backgrounds, particularly their linguistic backgrounds.

Some researchers have questioned whether call and response¹ is suitable only for recall of factual information or whether it might also be used for teaching the complicated thinking required for higher order learning (Cazden, 1999; Charles Long, personal communication, 1990). Observing that Lee’s research has demonstrated how students’ familiarity with signifying can be used as an effective bridge for the interpretation of figurative language in literature, Cazden wonders whether call-and-response can also make an academic contribution, and if so, what kind. As she puts it,

Which kinds of knowledge can be taught and learned in this discourse pattern and which cannot? Remembering the need to teach both basic and higher order skills (though not necessarily in that order), what are the most productive roles for call-and-response in the mix of activities and discourse patterns that should be part of today’s classroom? (p. 39)

In responding to the challenge to investigate the productive uses of call and response, Foster (2001) argued that the rhetorical features of African American discourse can be used as resources to help students who are already masters of oral expression become skillful in producing written forms. Moreover, Lee (1991) showed how these resources can be used in analyzing written forms. Arguing for a more widespread use of these oral resources in American education, she writes: “The voices of America’s diverse ethnic communities each have a linguistic power that too often only the creative writer—the novelist, the poet, the dramatist, the creative essayist—hears and appreciates” (p. 291).

African American students who come to school with a propensity for using figurative language, highly practiced in the skillful use of rhythm and rhyme, often fail to develop proper control over the sophisticated language skills of formal discourse because they must first focus on mastering the basics of punctuation, grammar, and other language conventions. Indeed, more sophisticated language skills are often taught only to the few students who take advanced reading and writing courses.

STUDIES OF MATHEMATICS AND SCIENCE LEARNING

Although most of the research concerned with the influence of culture and language on learning has been related to literacy development, a few studies have applied cultural knowledge to mathematics and science teaching. One of the most widely cited studies is by Uri Treisman (1985), whose initial work with undergraduate African American calculus students has been widely applied at many colleges and universities throughout the United States. Based on comparative ethnographic observations of Asian American and African American students, Treisman concluded that the latter could benefit from a cooperative approach to learning. A workshop program that incorporates this approach for African American students has had substantial success and received national attention.

A program of research has been undertaken by Ann Rosebery and Beth Warren at TERC, an education research and development organization that is funded by the Office of Education Research and Improvement (OERI) and the Center for Research on Education Diversity and Excellence (CREDE). The goal of this research is to work with teacher researchers to help them develop culturally connected ways of teaching science content. This research demonstrates how teachers might build on episodes of students' cultural experiences as they occur in the classroom by finding the connections between children's cultural ways of knowing with scientific ways of knowing. In one example, Warren and Rosebery analyze how a teacher skillfully draws connections between Haitian students' proficiency in African drumming and associated linguistic representations of drumming rhythms and the scientific study—inscriptions, discourse, and characteristics—of sound waves.

Another major approach is the Algebra Project developed by Robert Moses to introduce African American students and students from other ethnic backgrounds to the study of algebra during middle school in order to prepare them to be able to enter high school ready for advanced mathematics courses. The Algebra Project uses students' home language, whether it is Spanish, Haitian Creole, or African American English, to represent algebraic problems. Once students have used their home language, they are then in a better position to understand the problems as they are presented in standard English (Silva & Moses, 1990).

The Algebra Project employs a curricular process that draws on students' existing social knowledge and experiences as well as community knowledge and links these forms of knowledge to fundamental and powerful ideas within the domain of algebra. For example, the Algebra Project uses the overarching metaphor of the civil rights struggle to emphasize the importance of mathematical proficiency to the ongoing struggle for liberation and freedom. Within the domain of mathematics itself, it employs

metaphors such as the urban transit system to represent the number line—for example, using Park Street Station in Boston’s Massachusetts Bay Transit Authority (MBTA) Subway System to represent zero and various points going outbound or coming inbound to represent positive and negative integers.

Another example of the way African American cultural knowledge is included in the Algebra Project is by using key concepts from African drumming and linking them to mathematics. Although large-scale investigations—ethnographic/qualitative or quantitative—of the Algebra Project have not been undertaken, preliminary evaluations show that large numbers of the participants are passing algebra placement exams and being placed in honors algebra (Cazden et al., 1995; Silva & Moses, 1990).

Although this review of research has demonstrated the manifold ways in which culture can be used as a resource for teaching and learning, we need to bear in mind that we have extremely limited knowledge of the detailed processes by which the positive exploitation of culture in the classroom actually takes place. Moreover, our knowledge is extremely limited about the ways in which to help teachers learn how to use students’ cultural backgrounds and identities to improve their academic performance. It is in this context that we now turn to a research project that is oriented to helping teachers acquire the practical knowledge and skills they need to work effectively with culturally diverse children in urban schools.

A CURRENT PROJECT TO IMPROVE TEACHER PRACTICE

Despite considerable research on preservice and in-service programs, we still do not have clear guidelines about what to do to help teachers develop the expertise and dispositions required to teach a student population that is increasingly culturally, linguistically, and racially diverse. Professional teaching standards are frequently too remote and disconnected from real practice to be useful to practitioners seeking to improve their practice with this student population. Theoretical descriptions of good teaching do not by themselves result in improved instruction for children of color because they tend to leave unspecified the practices that are crucial in such instruction.

To address these issues, we are implementing a research project in which an after-school program, which we describe with the acronym L-TAPL (Learning Through Teaching in an After-School Pedagogical Laboratory), is being developed for elementary students in two urban school districts. The two programs function as pedagogical laboratories and professional development community sites for inexperienced teachers as well as research sites where various issues of teaching and learning can be examined.

At the heart of this project is the linking of inexperienced teachers with master teachers who have demonstrated success in teaching poor children deemed at-risk—the majority of whom are African American—in urban schools. The master teachers draw on students' cultural resources in highly skilled ways. In particular, they incorporate language routines that students bring from home into the flow of classroom life. These routines, often characterized by culturally distinctive language forms, range from oral performances of stories, choral reading, jump-in-reading in which students join in group reading when they are ready, and recitations of short, highly scripted material. These routines serve many functions as they are integrated into mainstream forms of classroom discourse: They motivate students and generate enthusiasm, create intimacy and closeness, draw out their background knowledge, develop their metalinguistic awareness, and deepen their conceptual understanding.

In establishing this program, our goals are twofold: to document and examine the processes of learning among children who are enrolled in the after-school pedagogical laboratories and to document and analyze the processes by which inexperienced teachers learn to teach in these laboratories. Consequently, our work simultaneously addresses the underachievement of African American students and the preparation of teachers who can work successfully with these students.

The project operates with the assumption that teachers learn to teach best by working under the guidance of skilled practitioners who provide them sustained opportunities to experiment with innovative practices and then receive advice about how to use the practices more effectively (Newman & King, 2000). One consequence of this assumption is that the project integrates teacher learning with the student learning that occurs in the pedagogical laboratories. The framework provided by *How People Learn* (Bransford, Brown, & Cocking, 1999) serves as the lens through which we are analyzing pedagogical practices of the master teachers. We are analyzing their practice to understand the role of motivation in learning, specifically, how the teachers create conditions in the classroom that draw on students' backgrounds, identities, interests, and cultural knowledge to help them develop a self-regulated and disciplined approach to study. Hence, the project attends not only to the cognitive dimensions of student learning but also to the behavioral, affective, and social dimensions that serve as a foundation for cognitive learning.

The project is also examining the attitudes and beliefs about education that children bring to the classroom and the role that teacher-learner relationships play in effective teaching and learning. Finally, the project is examining and documenting the processes by which teachers who are participants in the after-school laboratory develop and improve their instructional and professional competencies.

SIGNIFICANCE OF THE RESEARCH PROJECT

Our approach is built around the recommendations in the National Academy of Science report, *How People Learn: Bridging Theory and Practice*, as well as an independently crafted report written by the National Academy of Education (NAE, 1999). Both reports emphasize the value of “use-inspired research.” This approach integrates problem-solving research and professional development focused on solving specific problems of practice, while simultaneously conducting research on more general instructional principles “in which professional researchers and professional educators share in the accountability for achieving success in improving educational practices and outcomes” (p. 9).

Our research has both theoretical and practical significance. Theoretically, it will contribute to a better understanding of the social, affective, and behavioral processes that are prerequisites for cognitive learning in classrooms of teachers who teach for understanding. Moreover, the study contributes to a greater understanding of how teachers’ knowledge, goals, and beliefs function in improving their professional competencies and the degree to which such competencies can be facilitated when teachers work with a master teacher in an after-school pedagogical laboratory. Our findings should be useful to the field of practice, especially in urban schools that serve culturally diverse populations. We hope to provide both teachers and teacher educators effective models for dealing with teacher-student relationships, issues of classroom management, and, most important, pedagogical strategies that use cultural resources to motivate student learning.

We are still analyzing data from the 1st year of our research, and thus what we present here represents only preliminary findings related to children’s learning and teacher improvement. Although the end-of-year standardized test scores were not available as this article was being prepared, the pre- and posttest data of the individually administered Test of Early Reading Ability (TERA) and Test of Early Mathematics Ability (TEMA) show substantial academic growth.² At both sites higher levels in reading were observed: The percentile rank for students at one site, for example, increased from 57 to 63, a statistically significant gain [$t(19) = 2.521, p < .05$]. At both sites higher levels in math achievement were also observed, with the percentile rank for students from the other site increasing from 37 to 70, an especially impressive gain [$t(15) = 3.495, p < .01$]. Considering that the two master teachers have had many years of success in teaching children like those who participated in the after-school lab, the academic gains came as no surprise because previous research has shown that expert teachers can significantly improve student achievement (Sanders & Rivers, 1996).

Children's measured academic growth was also accompanied by changes in their motivation, social development, and identities as learners, specifically visible in their demonstrations of curiosity, concentration, persistence, and self-regulation in the after-school setting. In their notebooks and discussions, teachers described specific changes in children's academic progress and improved social behavior. Teacher comments focused on topics such as students using newly learned vocabulary, reminding each other about appropriate behavior, offering their opinions, actively participating in discussion, waiting patiently, and sustaining interest in an activity for a longer period of time.

As the after-school lab progressed, teachers also noticed children helping each other, taking personal ownership of their behavior and learning, taking care of the classroom environment, being more respectful of each other, all without prompting from the master teachers. Videotapes of the interactions in the lab bear out the teachers' observations. Teachers observed such behavior not only in the lab but in their classrooms. In effect, children in the lab were demonstrating and modeling this behavior for classmates in their regular classrooms. Parents also reported that they observed positive changes in children's behavior at home that they traced to their participation in the lab.

As the weeks passed, the teachers recognized that in both the social and academic domains, children were capable of much more than they had demonstrated prior to attending the lab. Although it was not always possible for the novice teachers to bring out all the desired behaviors in the children, they were able to shift what they were doing in important ways: For example, they were exhibiting more physical proximity in their interactions with the children, making increased use of cooperative groups and hands-on activities, allowing for more talk from the children, and building on children's contributions more than they had prior to participating in the lab.

These new practices represented an important shift in the teachers' point of view—for example, they were now focusing more on problems in their own teaching rather than in the children. Once this shift occurred, teachers, individually and within their groups, began asking different questions and attending to different aspects of their classrooms, their instruction, and even themselves.

We offer here a brief example of how one first-grade teacher shifted in the kinds of comments that she recorded in her journal. When asked at the beginning of the project to describe some of the challenges that children face in her classroom, she wrote the following:

Some children cannot focus even for 5 minutes. They are bouncy and loud, out of seats, and distract the others. And anger management!

Wow! 4 children especially can get upset easily, kick chairs, throw pencils, and yell out.

This teacher went on to describe herself as having concern for her students' success and a desire to learn but feeling too pressured to cover all the specific materials from the district office. She felt that she had no time left for any kind of innovative practice.

Over the course of the project, this teacher made comments and recorded observations in her notebook, implemented a range of lesson plans, received feedback from the master teacher, and continued to refine her practice. At the end of the year, this teacher, reflecting on the impact of L-TAPL on her students, her classroom, and her own practice, wrote the following in her final project evaluation:

The children were excited about the projects we did in class and came in energetically each day to see the progress of the butterfly, chrysalis, growth of the tomato plants, how the crickets and frog were doing, and see if it was time to drop another cricket into the frog cage. The children were enthused to find new science books to read and look at the pictures that generated passionate discussion and interest in putting their new learning into print and illustrations. I found that I looked forward to creating interesting and challenging projects and handouts to stimulate the children's curiosity. Each activity brought us fresh opportunities for teachable moments. The students had a feeling that learning was accessible and they were the directors. As they would begin to wonder about something, we would discuss the various possible options and they would suggest something we could try and I would just bring in the materials for their idea and we would run with it. I felt like we were without limits.

Watching the master teacher in action and getting an opportunity to teach at the Mind, Body, Spirit Club with feedback and then in my own classroom has been very invigorating. I love the teacher's obvious enthusiasm for teaching, learning along with the children, and love for the children. I have attempted to take my teaching in the same vein and my students and I have both gained academically. I have particularly enjoyed having five of my own classroom students be part of the Mind, Body, and Spirit Club. They have brought a new standard of enthusiasm, respect, and self-discipline to my classroom and spread their excellent attitudes to their classmates. Many other students would hear the stories of the Mind, Body, Spirit Club activities and wished they could join this after school learning program.

Considering the demonstrated academic and social growth that the children made under the guidance of a master teacher, we believe that if the

novice teachers continue to explore children's culture, knowledge, and interests in their own classrooms, the academic gains evidenced by children in the after-school lab will be evidenced more broadly. If such a transfer does take place, we will have successfully applied theory to practice and achieved the major goals of our project: improving both teacher performance and student learning.

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