

## **Revealing Shifts in Attitude among Undergraduates Participating in Academic Service Learning Programs**

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**Abstract:** *Our research focuses on the design and implementation of collaborative learning environments. We use an academic service-learning model, the Fifth Dimension, to bring together resources from university and community organizations in order to provide practicum experience to university students and enriched learning opportunities to under-served children in the local community. One of the tasks that continually confront us is the assessment of the impact of these interventions on our undergraduate participants. Q methodology, as it was designed expressly to study attitudes, perspectives, and world views, has proven to be particularly appropriate here. This paper describes our application of Q methodology in understanding the changes between pre- and post-term attitudes about teaching and learning in undergraduate students. It is our contention that practicum experience provides the opportunity for a holistic type of undergraduate development not possible in traditional classroom settings. Our results show that while marked shifts in attitude did occur during the class, the mindsets that the undergraduates brought with them into the program influenced the nature of those changes.*

### **Academic Service Learning**

In recent years academic service-learning, which is the practice of combining an element of service to the community with school-based learning, has become prevalent in a number of university disciplines. It is a pedagogy that involves universities in socially responsive action, prepares students for active citizenship, and aggressively counters the information-dissemination teaching methods that often characterize higher education (Howard, 1998). Academic service-learning programs are normally organized around a practicum. This hands-on learning is directly tied to the material students are concurrently exposed to in their traditional on-campus classes, but entails more than simply the addition of community service requirements to academic courses. The

students' experiences in the community setting are as integral to their academic learning as are their lectures and literature reviews. In this pedagogical model, service and academic learning are reciprocally related. Academic learning informs and directs the service experience, while the service transforms the academic learning and integrates it into the students' larger life experience (Eyler & Giles, 1999). Kathleen Weigert suggests that in order to qualify as an academic service-learning program (as differentiated from voluntarism, community service or other forms of experiential education), the model must provide the opportunity for students to do meaningful work that meets a need or goal defined by the community. The service provided by the student must flow from, and back into, course objectives. In addition, a true academic service learning curriculum requires that the students perform some sort of reflection or contemplation on the service in light of these objectives (Weigert, 1998).

Literature on academic service-learning consistently documents the numerous ways these programs have value for undergraduate students. The U.S. Department of Education reports service-learning instructional strategies result in a number of positive outcomes: increased academic achievement; decreased dropout rates; increased in-class participation; increased ability to relate to culturally diverse groups; higher willingness to accept responsibility; greater likelihood of participating in political activity as an adult; development of the skills, values and understandings necessary for committed, informed and responsible citizenship; a stronger sense of community within schools; and stronger connections between schools and their surrounding communities (see Markus, Howard & King, 1993; Mullany, 2005; Pisano & Rust, 2007; Plann, 2002; Weigert, 1998; Wilson, 2005). While these results are impressive, they are only indicative. Each program is a unique blend of university and community resources, and constantly in a state of flux as it responds to changes within and between these constituent parts. Students themselves come into the programs with different experiences, mindsets, interests and abilities. Thus each program must be evaluated separately, along guidelines that are established in accordance with the particular constraints and desired outcomes built into the program's curriculum, and with its student population in mind.

The program we examine, called the Fifth Dimension, is conducted within a regularly scheduled upper-division undergraduate class, The Design of Social Learning Contexts. Students enrolling in the class come from Communication, Human Development and Education Studies departments. Many of them plan to work in education after graduation. The primary learning objectives for the class emerge from a philosophy of education that privileges a dialogic approach to learning

and development, where context, past experience and active engagement in meaningful activities are believed to play pivotal roles in mediating learning outcome. Our goal is for the students to use their practicum experience to deeply engage with the academic materials in ways that integrate new learning with previously held ideas and provide sufficient mastery for successful deployment of these skills beyond the university experience.

We work to counter many traditional, conduit-style teaching models where information is assumed to be handed unproblematically to students in neat little packages that can be stored and called upon when needed. Grounded in cultural-historical activity theory, we favor instead a more constructivist model of learning and development where knowledge is understood as the socially constructed product of joint participation in meaningful or goal-directed activity. The course curriculum addresses this objective on two levels; first, in the class itself the undergraduates must take an active role in their own learning and development through discussions, hands-on application of the newly acquired information, and writing detailed field notes and in-depth personal reflections; second, the course material explicitly lays out the dialogic teaching philosophy of the course and requires the undergraduates to apply this model as they participate in the design and maintenance of the after-school program at the practicum site. At the community sites the undergraduates are encouraged to link theory with practice, to confront and reflect on their understandings of teaching and learning, and often to interrogate their prior conceptions of the lived school experience of children in different cultural groups. These activities are coordinated with on-campus seminars where the undergraduates read directly relevant papers and discuss theoretical and practical issues in light of their practicum experience.

### **Cultural-Historical Activity Theory and Q Methodology**

At the Laboratory for Comparative Human Cognition, we draw insight and develop theory by integrating ideas and methods from a wide range of disciplines and practices. While our research is firmly rooted in cultural-historical activity theory (CHAT) we are constantly on the watch for compatible perspectives and methodologies that might offer new inroads into, and ways of thinking about, our topics of interest (Cole, 2006). In this study we bring together Q methodology and CHAT to provide a rich description of the learning and developmental processes we observe in our academic service-learning program.

Cultural-historical activity theory is a genetic, holistic approach to understanding human behavior that emphasizes the critical importance of culture and social context for cognitive development (Wertsch, 1985). The basic concepts underlying CHAT were formulated by Russian social

psychologists Lev Vygotsky, A.R. Luria and A.N. Leont'ev. Within CHAT, subjectivity is seen as a reflexive internal arrangement or disposition that is shaped through social interaction, and the resulting positioning of oneself among objects and within social events (Vygotsky, 1988). Such positioning reflects both the self-understanding of the individual and the shared cultural and historical inheritance of the larger community—the social theories that shape our lives in a fundamentally normative manner. It is here that the affinity between CHAT and Q methodology is most apparent. Concourse theory, integral to Q methodology, treats knowledge as a social phenomenon, constructed through and residing in human interaction. 'Facts' in the Q model are "suspended in subjectivity," living in the communication itself, losing meaning when they are considered outside social relationship (Brown, Durning & Seldon, 2008, p.727). Q methodology was developed as a way to make sense of this irreducible subjectivity, by mapping how individuals think about a particular topic of interest.

We view attitudes as tools, as mediating artifacts that are acquired in school and in life practice. At a deeper level these patterned social practices are shaped by fundamental social principles or structures. Such structures are theorized to emerge from and to be the elemental stuff of culture (Sewell, 2005). Within the communication around any topic, from the simplest exchange between mother and infant to the abstract philosophical debate, structure lurks. Brown, *et al.* like the term "shared communicability" (p. 727). They use it to describe the "methodological character" (p. 727) of common understandings, shared narratives and ways of communicating in particular situations that make meaningful interaction possible. In short, structures are the raw materials we draw from in order to organize our thoughts and behaviors as we engage, in the current example, as novices and as mentors in pedagogic activities both in and out of formal educational settings.

CHAT and Q methodology provide vantage points from which we can observe our undergraduates, who come to us from a broad array of cultures. Each culture has its own interwoven structures, and its own cache of attitudes toward education. While we are specifically concerned with the ways our students think about teaching and learning, we keep in mind the ways these notions are inseparably bound up in a larger social process, and the way these processes may develop and interact differently in different social contexts, with different resources, within different socioeconomic strata or ethnic groups.

### Methodology

A representative sampling of items from a particular body of communication is central to any attempt to reveal the vectors of thought that sustain and are sustained by that communication. In Q methodology

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this sampling becomes a set of statements selected by the researcher to describe the subjective perspectives of the participants. For almost two decades the Fifth Dimension service-learning program has been archiving samples from the concourse that both sustains and describes the program. The archive contains field notes, often accompanied by video or audio recordings, submitted daily by participants at every level of involvement to an online central database (interested readers may contact the author for access.) These notes follow a prescribed format, describing the observers' overall first impressions of the site and the children they interacted with, a detailed account of the activities they engaged in, and finally, reflections on the day, which are (ideally) informed by the readings and discussions in the course. At the end of the day, the professor and researchers read and respond on-line in this open forum to each field note. This procedure has been in place and functioning since 1989, resulting in an extensive searchable database of student observations that is central to much of the research carried out at the Laboratory for Comparative Human Cognition. An ongoing challenge to researchers in the program has been to find ways to reveal patterns in this vast and often unwieldy data set.

The primary goal of the current investigation was to examine how (or whether) participation in the course and the practicum might be associated with changes in the students' attitudes towards teaching and learning. From the field-note data base, we took verbatim a core set of 120 comments about the students' teaching experiences in the practicum. (The archive later proved useful in providing some cues in interpreting the results of the study.) We were specifically looking for a shift from a traditional teaching and learning paradigm to the more socially constructed understanding being modeled and discussed in the course. In order to isolate this type of development, the sample was refined to pair the statements in a way that might exemplify possible 'before and after' concepts. For example, the two statements "*learning is accomplished through repetition and practice*" and "*learning is accomplished through observation and imitation*" were included in the sample with the expectation that we might see a shift in attitude from the first to the second. It's important to note that both sides of the countering statements may well have rung true to many of the students, and that it was possible for the students to weight 'opposing' statements equally. We relied on the factoring process to reveal relationships among them.

Statements were culled to prevent repetition, resulting in a final Q sample of 80 statements. The statements were plainly labeled with numbers from 1-80 and printed onto mailing labels which were attached to decks of 80 3"x 5" note cards. Each deck of Q cards contained

one each of the 80 statements, shuffled into random order before each use.

In an effort to capture the patterns of thought our students brought with them into the practicum experience we asked them to complete the pre-term Q-sort task at the first class meeting. This was done before the syllabi were distributed and before the goals of the class were discussed in order to minimize contamination of the students' earlier notions through exposure to the current course materials. During the course of the term the students were offered suitable spaces and appropriate tools for critical analysis of their existing ideas. At the end of the school term we ask the students to once again sort the same Q sample, and we compared the pre- and post-term factor structures for evidence of attitude change.

### **The Incoming Class**

I took on the role of a teacher figure for a good portion of the quarter. Not only did I try to make learning something they could understand better (by rewording the problem or even taking random events during the day and making them into some sort of a math lesson) but I tried to give them constant encouragement and praise to let them know that I recognized their efforts (Student field note, MCf, 2006).

This typical quotation from one of the student's reflections demonstrates how students enter the class with established attitudes about learning and teaching. For the most part these predispositions are the product of the student's own school experiences in traditional classrooms, where the teacher's goal is to narrow the gap between a pupil's level of knowledge upon entry and a target level of knowledge about a particular subject matter. Weinstein (1988) shows that education students enter university programs confident they've already mastered the qualities most important for successful teaching, placing highest import on a teacher's "presence" in the classroom, on their ability to effectively "deliver" a lesson, and on the affective components of teaching. Similarly, Sargue (1996) finds university students value a "teaching personality" more than the development of a repertoire of pedagogical tools for teaching. Both researchers demonstrate that not only are these attitudes highly resistant to change, but they come to filter and to color the course material and practicum experiences the students encounter. Working from this premise forces us to acknowledge the profound impact earlier experience and concurrent outside experience exerts on the development of our students in the program. With this in mind we paid particular attention to the cultural and socio-economic background of the students in the program.

### **Demographics**

Of the sixteen students who participated in both phases of the study, fifteen were female, one was male and all were between twenty and twenty-three years of age. Seven reported Asian heritage, one Arabic, and eight European-American. The primary languages spoken at home were English (8), Cantonese (3), Korean (2), Mandarin (1), Norwegian (1), Armenian (1) and Arabic (1). All but two of the students have at least one parent who is English proficient. The highest education levels attained by both parents were determined from the undergraduates' self reports and served as an indicator of socioeconomic status. Among the 32 parents there were three PhDs, two MDs, one JD, nine Master's degrees or postgraduate credentials, seven Bachelor's degrees, six two-year credentials, and four high-school diplomas.

### **The Sorting Task**

The sorting tasks were accomplished during the regularly scheduled lecture periods on the first and last days of the term. A facilitator was on hand during the sorting, fielding questions and advising the students on the mechanical aspects of the task. The students were asked to sort the statements along a continuum from those items they felt were "most important to keep in mind" when working with children to those that were the "least important to keep in mind." They were given a printed response matrix to help with this task. Typically, a student read through the statements a first time, placing the cards on the desk in front of them in some pattern that made sense to them. Some began with three piles that loosely corresponded with "least important," "most important" and "somewhere in between." They then re-read and rearranged the cards, moving them between piles until they were satisfied that the order represented the way they were thinking about the subject at hand. Others didn't make piles at all, but covered the entire desktop with single cards that they constantly shuffled around until they were satisfied with the order. Eventually all of the arrangements came to resemble the distribution on the response matrix. At this point, we asked the students to begin at one side or another and enter the numbers on the cards in the spaces on the response sheet.

### **Results**

Once all of the Q sorts were accomplished, the data were manually entered using Q software, PCQ 1.4.1. The first step in the analysis of the pre-term data was to produce a correlation matrix of coefficients representing the relationships between the sorts. The correlations were then subjected to factor analysis using centroid extraction and hand rotation to reveal the simple structures. Using hand rotation three distinctive and coherent factors were isolated that accommodated all 16 of the undergraduate students and accounted for 55 percent of the

variance in the pre-term data. Centroid analysis and hand rotation of the post-term data revealed two coherent factors that accommodated all sixteen students and accounted for 57 percent of the variability in the data (see Appendix 1.)

Several indicators were considered in the interpretation of each factor. We first looked at the collection of statements judged by the members of a factor to be most and least important. We took note of those statements that distinguished one factor from the others by nature of their unique (not necessarily high or low) weighting, remaining cognizant of the relationship of these with the consensus statements, and we considered the extent to which the members of each group favored statements we had originally categorized as “traditional” or “constructed.” Finally, the emerging composite description of each factor grouping was enriched by and interpreted in light of field notes written by the students before, during and after the practicum course. Brief descriptions of the group members are included in this report as well, because an important finding was that the factor groupings that emerged in the results were consistent with the cultural groups that were represented in the class. The interpretations are discussed in more detail below.

### Pre-term Consensus Statements

There were eleven consensus statements that emerged from the final graphical rotation of the factors in the pre-term sorting. Of these eleven, eight statements carried a -1, 0, or 1 weighting. In other words, there was little consensus on ideas that the participants judged to be extremely important or unimportant. The statements that the group both agreed upon, and felt strongly about (11, 44, 46) express the belief that a degree from a great university is not enough to make a great teacher, that classroom discipline is not sufficient to guarantee learning, and that learning processes are something we can support, but not control.

The first group, Pre-I, with demographics as shown in Table 1, is distinguished by the emphasis placed on the intrinsic value and potential of each child. One of the two statements members of Pre-I ranked above all others, “The child brings important resources into the learning process” (61), is echoed in the first field note written by one of the group members, “I feel that children are precious and impressionable gifts and it takes a special person to undertake their upbringing” (VRf, field note). The other top ranking statement attests to the enormous responsibility placed by this group on the teacher: “It takes time and effort to recognize our own cultural patterns, understand those of others, and make the adaptations necessary to create successful learning contexts” (47). First and foremost, this group expected the

teacher to learn about the individual needs of each student and to adjust the learning environment to meet those needs. Also ranked positively were statements that iterated other obligations the group associated with teaching, for example, to create optimal contexts for learning (45) and to mediate learning practices (50). In their field notes members of Pre-I repeatedly referred to the need for teachers to “tune in” and listen to their students. One student captured the group’s viewpoint on the relationship between teacher and student in her comment from the second week of class: “People learn in different ways and if someone does not understand what I am teaching it is not that they are incapable of learning, it is that my method of teaching does not reflect their style of learning” (SSf, course note).

**Table 1: Description and interpretation of pre-term factor I: Focus on the value of the child**

<i><b>Id.</b></i>	<i><b>Loading</b></i>	<i><b>Language(s)</b></i>	<i><b>Occupation</b></i>	<i><b>Cultural</b></i>
Cef	69	English	Undergrad, Comm/HDP, Sr.	American, Anglo (MBA)
JGf	81	English	Undergrad, Comm/HDP, Sr.	American, Anglo (MD)
MCf	56	English, ltd Chinese	Undergrad, Comm. Sr.	American, 4 <sup>th</sup> gen. Chinese (PhD)
SSf	48	English	Undergrad, Comm. Sr.	American, Anglo (AA)
VRf	45	English	Undergrad, Comm. Sr.	American, Anglo (BS)

*Parentetical comments represent the educational attainment of the student’s most highly educated parent.*

Five items distinguished Pre-I from all others, 19, 60, 61, 71, & 74. This was the only group to place a negative value on statement 19, “Children are motivated by the need for approval and acceptance by their teachers.” Consistent with this, they weighted the counter statement, “Children are motivated by the desire to learn” (59) higher than did either of the other groups. Unlike members of the other groups, those in Pre-I de-emphasized the need for active student participation (60) and the value of group activities (74).

Negatively weighted statements like “Some children do not want to learn” (25) and “Teaching involves the transfer of information from teacher to student” (5) taken in conjunction with highly weighted statements like “Teachers must earn the trust of their students” (43)

and “Teachers can learn from their students” (49), further indicate an idealized relationship among teachers and learners where the primary responsibility of the teacher is to provide a safe and fertile environment in which the child’s natural desire to learn can flourish. Especially telling are the two statements that are rated absolutely lowest: “Intelligence is mostly a matter of biological inheritance” (30) and “Learners respond to firm guidelines” (14).

In her field notes student MCf sums it up nicely, “I believe every kid here has the potential to be whatever they want. We just need to give them the chance to learn” (MCf, FA06).

**Table 2: Description and interpretation of pre-term factor II: Children need structured learning environments**

<i><b>Id.</b></i>	<i><b>Loading</b></i>	<i><b>Language(s)</b></i>	<i><b>Occupation</b></i>	<i><b>Cultural</b></i>
ARf	56	English	Undergrad, Psych/HDP, So.	American, Anglo (BA)
CLf	59	Chinese, English	Undergrad, Comm Sr.	Chinese, move to US in 4 <sup>th</sup> grade (JD)
MoCf	42	Chinese, English	Undergrad, Comm Sr.	Chinese, Canadian (MA)
NYm	50	Chinese, English	Undergrad, Comm. Sr.	Hong Kong, came to US for college (PhD)
BNf	56	English, Swedish	Undergrad, HDP. Sr.	American, Swedish (HS)

*Parenthetical comments represents the educational attainment of the student’s most highly educated parent.*

Members of Pre-II, with demographics in Table 2, stressed the importance of structured learning environments (2, 68), showing little interest in issues of culture and cultural difference (47) or in the fairness or effectiveness of standardized testing (38). They strongly disagreed with the statements “Learners behave independently of their teachers” (51) and “Children are motivated by the desire to learn” (59). They valued instead the contrasting statements, “Good teachers demand that students pay attention” (11) and “Children are motivated by the need for approval and acceptance by their teachers” (19). It would be wrong to assume, however, that this group is advocating a purely top-down teaching model. They also stressed collaborative learning (74, 42) *Shifts in Attitudes in Academic Service Learning Programs*

attracting and maintaining the children’s interest (64) and earning the trust of the students (43).

Ten statements distinguished this group from the others (1, 2, 8, 19, 24, 38, 47, 51, 59, and 75). Notably, members of this group gave highest ratings to the statements: “Teachers must keep order in their classrooms” (2) and “Once perfected a good learning activity can be duplicated in many different contexts” (1). Members of the other two factors weighted both of these statements negatively.

Reflecting on her first days in the program, one student offers the following comment, “I struggled between being a disciplinarian and a buddy. When I discovered a little bit of structure for myself, I felt at ease. I’m comfortable being a disciplinarian. I had to find ways to ease into the role of being a friend as well while being productive with the children” (CLf, field note). There is a strong thread in both the field notes and the reflections from this group of an ongoing comparison between formal, traditional teaching methods and the more collaborative ones being modeled in class: “In Chinese families, reward just means not getting punished. I’m not saying that’s the best way, but there are good things about it. We did all stay in school, and we don’t hate our parents. Actually I think we might love them more” (CLf, field note). While they are eager to embrace the more relaxed procedures, they are quick to cite the successes of the old ways and are wary about giving up the control that the more hierarchical methods afford.

Students loading onto Pre-III were most concerned with ways to keep the child actively participating in learning activities. Virtually all of the high ranking statements in this factor center on this theme which also appeared early on in the students’ notes. For example, one complained that the activities we were providing were not exciting enough for some of the kids. This sums up the mindset of the group: “It really doesn’t matter how educational the computer games are. The game can have the potential to teach them a lot, but in the end if they don’t play it they don’t learn anything. It all comes down to that” (NTf, field note).

Statements 16, 19, 53, 68 and 72 were identified as those distinguishing Pre-III from all others. This was the only group to assign a high value to the statement “Children are motivated by the need for approval and acceptance by their teachers” (19). This was the only group to assign a negative value to “Children want to be successful adults some day” (16). Pre-III group members’ neutral response to statement 68, “Poorly organized learning settings are a frequent cause of poor learning” seemed out of character until we came across the following field note: “Today it was funny. We spent all that time making up the cards and deciding on the rules of the game, and then after about

10 minutes the little girls all just wanted to play jump rope and they did that all afternoon until Dr. Mike made them go inside and do the computer activities and they complained a lot about that” (PSf, filed note). Pre-III members express the notion that it’s far less important to be organized than it is to be inviting. Getting the kids involved and keeping them engaged is their first priority.

**Table 3: Description and interpretation of pre-term factor III: Active participation is the key to successful learning**

<i><b>Id.</b></i>	<i><b>Loading</b></i>	<i><b>Language(s)</b></i>	<i><b>Occupation</b></i>	<i><b>Cultural</b></i>
AAf	42	Armenian, Arabic, English	Senior, Com major	Canadian, US for college (AA)
CSf	42	Korean, Spanish, English	Junior, Comm/HDP.	Peruvian Mother, Korean Father, US for college (MD)
LSf	50	Korean, English	Senior, Comm.	Korean, came to US in middle school. (BS)
NTf	42	English, limited Chinese	Junior, Comm.	American, 3 <sup>rd</sup> generation Chinese (BASS)
PSf	52	Chinese, English	Junior, Comm.	Hong Kong, came to US in college (MBA)
SOf	68	Norwegian, English	Junior, Psych/HDP	American father, Norwegian mother, lived in Norway age 10–18. (HS)

*Parentetical comments represents the educational attainment of the student’s most highly educated parent.*

### **Description and Interpretation of Factors Emerging from the Post-term Q Sort**

Two factors accommodated all 16 of the undergraduates in the post-term sorting. We were not surprised to find that more than two thirds of the class factored together into one post-term group, and that the factoring revealed a general attitude for this group that was highly consistent with the pedagogical goals of the class. Nor were we surprised to learn that about one third of the students factored together in a pattern that held fast to the more traditional teaching and learning models. Students in prior years had followed much the same pattern. We were very surprised, however, to discover that, with only two exceptions, the original or pre-term groups remained intact, factoring together again in the post term sort. All five members of Pre-I and five of six members of Pre-III factored together into Post-A. Four of five members of Pre-II factored together on Post-B. This discovery guided the analysis that follows.

#### **Repositioning**

Comparisons between the overall pre- and post-term results revealed a clear shift away from the statements associated with traditional teaching models and toward the dialogic models being discussed and practiced in the course. Those statements that adhered to rigid top-down teaching practices, for example, that teachers must demand that students pay attention (11), expect respect (3), and have structured lesson plans (10) dropped slightly on the list for both factors as did statements about the value of standardized testing (36) and about the importance placed on a child’s “intelligence” (3, 9). The statements that edged up on the lists expressed the need for active participation (76), interactive teaching methods (75), and culturally sensitive testing procedures (78). There was also an increase in the value placed on understanding what motivates kids (58). One student, who was among the students whose sorts reflected this attitude shift offered comments in her final reflection paper that helped to flesh out the picture that emerged from the factoring:

I thought I knew it all. I thought I had all the knowledge. But you really don’t need so many things and plans to make things work. I had to learn to take what was in front of me and simply make the best of it. I learned that I didn’t need to dig so deep and think so hard. It is not worth stressing over how something should be done or even about getting it done right away. Pushing the kids too far will only cause backlash and it is not beneficial to either party. The kids can learn more sometimes while playing and having fun than from the structured computer games. It was only then when I saw the impact I had made on the children. It was the

confusion that eventually guided me to find the perfect balance” (SO, course note).

While these overall results demonstrate that some shifts in the students’ attitudes were indeed taking place, closer inspection of the data shows us that not all of the students made this adjustment. One group in particular, made up for the most part of students who loaded onto factor II in the pre-term sort, proved quite resistant to change. These findings are discussed later in the paper.

### **Post-term Consensus Statements**

There were 28 consensus statements on the post-term Q sort, only five of which had also appeared as consensus items in the pre-term results (4, 11, 33, 54, and 56; see Appendix Tables 2a and 2b). This is more than twice the number of agreed-upon items in the pre-term sort, suggesting the students have come to a more homogenous understanding of the concepts being addressed in the class. One factor that surely contributed to the cohesiveness of the group’s attitude about teaching and learning was the shared field-note database where each of the students posted their daily notes and read and commented on the notes of others at the site. One wrote: “I learn a lot from other undergrads’ field notes as well as learning from the children . . . Field notes provide lots of information I need for dealing with problems with the children and for my research paper” (PSf, course note).

Most noteworthy are eight statements that emerged in the earlier results as items that distinguished the three pre-term factors, but that appear in the post results as items of consensus. As a group, the undergraduates attitudes cohere around concerns about cultural awareness (38, 47, 66), about encouraging children’s engaged involvement in learning activities (60, 62, 74, 80) and about the acknowledgement of, and respect for, the resources that children bring into the classroom (54, 61). In addition they are united in questioning the idea that meaning can be passed unproblematically from teacher to student (8), that poor learners are not interested in learning (16, 24, 56) and that unbiased standardized testing is possible (38).

### **Post-term Distinguishing Statements**

The most dramatic difference between the two post-term groups was related to statement 7: “Deep down we are all alike.” Members of Post-A gave this statement their absolute lowest priority, while members of Post-B placed it among the five highest priority items. This statement was a quotation that several students had included in their field notes after reading “Creating Cultural Connections” by Reitenauer, Cress and Bennett (2005). The reading was part of a lesson on coming to terms with privilege. Reitenauer, et al. see the “Deep down we are all alike” mindset as an early phase in the development of cultural understanding

that is often followed by the more complex notion that in many ways we are not alike, and that we need to learn to accommodate our differences. This assignment was embraced by the majority of the students, who immersed themselves in the reading and the accompanying exercises. The following excerpts are from notes written by members of Post-A during the first week of class when the Reitenauer reading was being discussed.

I just assumed the world was like my home town, a melting pot where you could mix languages, foods, cultural traditions and blend them together to make them your own. I understood that cultures had differences, but I had embraced the differences and formed my own unique understanding of multiculturalism, in which I believed that race and ethnicity were not really important factors in developing individuals. Perhaps the desire to fit the homogenous model was so great for me in high school and middle school that the cultural differences were down played. Sure I had celebrated the different cultures with a huge cultural fair each year, but at the end of the day when the different ethnic foods served at the fair were gone I believed we were all just the same, or so was my belief (CEf, course note).

The “Creating Cultural Connections” reading was a good preparation. It gave a way of noticing a different culture and trying to understand and identify with the unknown. It was a huge wake-up call to see the fact that, yes, I am a very privileged individual . . . I think right now I am in the “acceptance of difference” phase and there is a lot of room for improvement for me. (NTf, course note).

But not all of the undergrads reacted the same way. There were five students who told us in the class discussion that the exercise was a waste of time. Many of these were from minority cultures themselves, from families who had struggled to find a niche and make the American system work for them. While at other times these students had been quite circumspect in their comments, on this subject the message was clear: Cultural differences are not terribly important in the classroom. The American school system is one that will work for anyone who is willing to put in the effort. Interestingly, three of these five students factored together in the pre-term test (Pre-II) and four of the five factored together in Post-B.

On the subject of teachers and teachers’ roles in the learning process, members of Post-A assigned a much higher priority than did members of Post-B on the creation of interactive learning environments (45, 6), on being sensitive to individual students’ needs (41, 49, 51), and on discovering measures of learning that are fair and appropriate (76, 77).

Undergraduates on Post-B valued the creation of procedures that could be depended upon, standardized and applied across a variety of learning contexts (1, 17), and showed a higher interest in learning about what motivates children in general (19).

### **Coming Together, Staying Together, Changing Together**

As mentioned earlier, a close examination of the Q results shows that members of pre-term groups I and III converged to create a single post-term factor A. Members of Pre-II remained together to create Post-B. There were only two exceptions, one student from Pre-III left her group to become part of Post-B, and one member of Pre-II defected to join Post-A. Post-A, then, was comprised (with one exception) of those who had (in the pre-term sort) placed highest emphasis on the intrinsic value of the child, and those who (in the pre-term sort) were most concerned with creating learning environments that promoted active student participation. All but one of the students in Post-B had stressed the importance of highly structured learning contexts in their first sort.

As a group, the students shifted their perspective and became more homogeneous in their views. Students in Pre-III/Post-A shifted dramatically from the traditional to the dialogic statements. Those in Pre I/Post-A showed a more modest shift in the same direction. Both groups came to weight the dialogic statements more heavily in the post-term sort. In contrast, those students who loaded onto pre-term II and post-term B demonstrated very little shift, and that shift was away from the espoused dialogic model and towards the traditional teaching philosophy.

### **Pre-term Factor I/Post-term Factor A**

A more nuanced look at the changes shows that members of Pre-I/Post-A made a substantial shift in only two statements. On “Deep down we are all alike” (7), they dropped from a -2 to a -7 weighting, and on statement “Some cultures value learning more than others” (26), they dropped four points from +2 to -2. This new focus on culture (heavily encouraged in the class readings and activities) was central to the notes and reflections written by members of this group. One student, for example, has always wanted to be a teacher, but cultural differences were not issues that she had considered before this class. She writes, “Through the entire process of working at the 5<sup>th</sup> D I’ve decided ways in which I would teach in my own classroom. I now believe that culture is important as well as education of culture. I wish that in the educational system biculturalism was embraced. My classroom would explore various cultures allowing children to educate their peers about their own cultures and languages” (SSf, field note). Another, also an aspiring teacher, echoes this sentiment in her final reflection paper, “Working at the 5<sup>th</sup> D made me realize how important it is to embrace the culture and

heritage of my students in order for them to get the most out of their education” (JGf, course note).

Looking back at the demographic data reported in the pre-term results for this group, we were able to see that these students were all English-speaking California residents with highly educated parents, and had spent their entire school careers in traditional mainstream classrooms. Quite simply, we were preaching to the choir. They had heard, and apparently assimilated, our message before ever taking the class. They showed only a modest change in attitude, because that was all that was required of them.

### **Pre-term Factor III/Post-term Factor A**

The students in Pre-III/Post-A showed the most extreme attitude shifts in the class. On 24 of the 80 statements they made shifts of four or more points. Twenty of these statements dealt with issues of cultural awareness and stressed the need to get to know each child on a cultural level, as opposed to merely evaluating the child’s academic skills. Only then, the field notes from this group tell us, is it possible to tailor a learning experience to fit the child’s unique situation and needs. One of the undergraduates, who exemplifies the Pre-III/Post-A group did an especially fine job of chronicling the changes in her thinking over the course of the school term. Excerpts from her weekly reflections are included here in chronological order. Presented in this way they comprise a vignette that offers a glimpse of the shift in her attitude that we were able to capture using Q methodology.

Week 1: During my site visits this week, I learned about how high my expectations sometimes are of children and how I need to recognize that each child is different and brings his or her own amount of potential and creativity. Since I didn’t know what to expect, I’m really glad I was able to come in with a teachable here, but realized just how ethnocentric I am even within the first few minutes, as I looked on uncomfortably at the visibly small space we would be working in.

Week2: Alicia really had no academic goals that I could help her with, mostly because of her young age and when I asked her if she wanted to play any games that would challenge her to get to next levels, she said she didn’t want to. This was really humbling for me because I think as a college student, I wanted there to be more structure and for her to really have set goals that I could help her achieve. But in reality, Alicia had goals of her own—to color, draw, play and just enjoy her time there. I realized that to help Alicia achieve her goal of having fun and being able to interact and learn that way, I would need to accustom myself more to her

culture and bring myself into her world, rather than have a closed mind.

Week 4: Oregon Trail II was very interactive for both Saul and I. We were able to truly be co-learners and learn the entire process of playing this unfamiliar game for both of us from start to finish. It was cool to sift through the task card and also, to use our different problem solving skills to figure out how we could overcome certain obstacles and barriers, in order to get to Oregon.

Week 8: I was really scared to work with Carlos, but thankfully, I learned that it just takes patience on our parts and that we cannot expect the kids to like us immediately. It was a humbling reminder that it does take awhile to establish our rapport with the children, but that they are aware of what is going on and truly do value our presence, as I began to notice through Carlos' laughter and joy towards the end of our game playing session today.

Week 9: One interesting thing I noticed today was simply how little Juan was unashamed of his Spanish heritage. He was actually proud of his heritage. It was refreshing to see a child so innocent and so proud of their culture because it reminded me of why it is so important to have sites like LCM, as they attempt to preserve and encourage the biculturalism of the kids and show them the value there is in being bilingual.

Week 10: It's crazy to think how much of an impact we really do have on these kids, but it's amazing that we could be used in such a way! By showing these kids that we care, are willing to invest in their lives, and genuinely are interested in what they are up to . . . it truly does make all the difference in the world. How nice to have come out of this experience, bonded with a new little friend! (NTf, course note).

Demographic data on this group reveals that only one of these students reported English as a mother tongue, and that only one (the same student) received a traditional American primary and secondary education. We assumed from this that the concepts we were presenting in the class were new, or at very least, were presented in a different light from any that these students may have encountered previously. Our analysis above leads us to believe that these individuals actively engaged with the material provided and experienced a true change in their attitudes about teaching and learning during the course of the term. The one exception was a student (CSf) who parted from her group and factored into Post-B. When we returned to her field notes we found she spent the largest part of her time discussing the economic differences

between her and the children at the site, and the lessons she had taken away from this exposure to a radically different lifestyle. We know CSf to be a serious and thoughtful student from a highly privileged home, and our best reading of her Q responses is that the issues addressed through the Q sample were not those that she was grappling with during the class. In other words, we were looking for evidence of change in attitudes about teaching and learning. The student was working at making sense of the socio-economic disparity between her and the children in the program. This Q sort was not an appropriate measure of her particular path of development in the class.

### **Pre-term Factor II/Post-term Factor B**

All but one of the students in Pre-II factored onto Post-B. In direct contrast to the responses of those in Pre-I, members of Pre-II/Post-B (who had supported a highly structured teaching environment in the beginning of the term) moved from one side of the continuum to the other on statement 7: "Deep down we are all alike," shifting from -4 to +6. Other noteworthy attitude changes for this group were on "Teachers can learn from their students" (49, from 4 to -1), and "Learners often behave independently from their teachers" (51, from 0 to -4), in both cases moving away from the dialogic teaching philosophy being modeled in class and toward an even more rigid, top-down model than the one they had supported in the pre-term sort. We have included portions of one student's weekly notes below to demonstrate how members of this group maintained a consistent mindset throughout the term.

Week 1: I am not able to give all the children the attention that I would like to be giving them. That was actually mentioned today in class. The mischievous and outspoken ones get most of my attention because I constantly have to have my eye on them. The ones that behave and follow all the rules then get shoved in the background because I'm too occupied with the others that are causing troubles. This is obviously unintentional but I'm led to believe that there would be negative effects for these children who aren't getting as much attention.

Week 2: Today was the most structured day I have ever since I started at La Clase Magica. I sat down with Isabel and worked on her homework. Then we moved on to a computer game. Then it was snack and spending some time outside. I felt extremely fulfilled and accomplished.

Week 3: I'm struggling with our role at La Clase Magica. By saying this, I'm referring to the part where we are simply supposed to be there to guide and support the children, not a disciplinarian. When Isabel was having a difficult time getting through her homework, I felt like it wasn't in my right to discipline her.

However, I feel like by allowing her to almost do whatever it is that she wants, I am appropriating her actions. I almost feel like I'm reinforcing to her that it is acceptable to behave that way.

Week 4: Another thing that surprised me today was how Alicia responded when I had asked her to clean up her mess. She completely disregarded the notion of cleaning up after herself. I wonder if that has anything to do with how she perceives the undergraduates. She might not feel the need to listen to me because she sees me as a "friend" and not a figure of authority. Am I appropriating her behavior and setting a bad example by letting her get away with that?

Week 5: I kept encouraging Isabel to keep working on her homework but I would ask her questions so that I could teach her how to do the problem but she would completely ignore me because she would be paying attention to something else. I kept encouraging by telling her that we need to finish this so we can move on to something else. I also said that I didn't want the same thing to happen the other day where her mom was upset because she didn't finish her homework. We kept trying to work on that page and she just got really frustrated because she wasn't understanding the concept. As she grew frustrated, I grew impatient and frustrated as well.

Week 8: Today's experience really had me thinking about the purpose of Fifth Dimension. In class, we talked about the pull and pressure to do things in different ways. It feels like we've lost sight of what the original goal was which makes our duty there very difficult. Jazmine needs a lot of special attention and I believe she needs discipline. I keep getting told that we're not supposed to be their to discipline them; however, I don't believe that not disciplining her and teaching her good work habits will facilitate her future. I don't think me being there watching her goof around will be help enough to make a difference in her life. And isn't that what we're there to do, to make a difference? (CLf, course note).

One Pre-II/Post-B student's field notes and his final reflection paper directly contradicted his Q sort results. During the term he wrote extensively on his developing understanding of learning within social contexts, giving detailed examples of his encounters at the site and supporting them with theory from the class readings. In addition, we watched as he became a valued and integral part of the program, interacting in truly inspired ways with the children and the other undergraduates as well. His Q-sort results show nothing of this development. We are reminded here not to take for granted a direct link between the attitudes that are expressed through the Q sort and the

ways those attitudes manifest in real life situations, and suspect that the student, being particularly bright and efficient, dispatched the post-term sort in the most expedient way possible—by recalling and duplicating what he had accomplished on the pre-term exercise.

There was only student in Pre-II who factored onto Post-A. We looked eagerly to her notes for an account of the experiences that might have promoted a change in her perspective. We were surprised to find that she said little explicitly about education at all, but focused instead on the warmth and depth of the relationships she had built with the children. When we went to the demographic data we found that she was the least advanced student in the class (a sophomore) and the only English-speaking, traditionally educated member who participated in this study. In a follow-up interview we discussed the results of the sorts with her and asked for her interpretation. She told us that she came into the class with little exposure to pedagogic theory and no firm convictions about teaching and learning. She had made every effort in her pre-term sort to "do it right" or to say what she thought we wanted to hear. By the end of the term she understood that there was no right or wrong way to respond and she gave us an honest reflection of her position in relation to the statements.

It is important to mention that membership in one group or another did not predict success in the class overall. Several of the students in the Pre-II/Post-B group, those who held steadfast to traditional teaching models, were exceptionally successful in their interactions with the children and in their coursework. One wrote an honor's thesis on experiences in the class. There are several ways to interpret these observations. One is that that given their personalities, backgrounds and experiences with children at the site, many of the students found traditional teaching methods to be the most effective for them. This type of individuality was encouraged in the course. Another is that one trimester is simply not long enough to produce readily apparent change. We are fortunate that several of the students in this study will be returning, and look forward to following their continued progress.

## Conclusion

### Q Sort Identifies Culture as a Central Issue in Undergraduate Attitude Change

The most interesting (and unexpected) outcome of this study was the way Q methodology exposed patterns of thinking that divided the students along lines that were highly consistent with the cultural grouping in the class. CHAT requires that we be wary of customary generalizations about ethnicity, class, race, and gender, and recognize the intrinsic specificity of social contexts. So instead of seeing these categories as cohesive patterns, we consider them to be permeable

arrays of intersections where the patterns and processes deriving from ethnicity, class, race, and gender interweave. In our earlier research, looking specifically at the 'borderwork' being accomplished in this same group of students, we noted that the undergraduates were constrained by ways of thinking that were laden with complications from their personal histories (Downing Wilson, 2008). What the Q study revealed that we did not pick up in the earlier study was the in-group consistency in the ways members with related cultural histories appropriated the class materials and shifted their thinking during the course. In other words, those students sharing a like cultural heritage not only brought analogous sets of ideas into the class, but their understanding of the subject matter developed along similar paths leading them to take similar sets of ideas away with them at the end of the course.

These findings are consistent with the three interrelated theoretical threads introduced earlier, Vygotsky's depiction of a socially constructed "internal disposition" or positioning of oneself within social events, Brown, Durning & Seldon's understanding of a "shared communicability," and Sewell's argument for flexible yet resilient social structures. In each case we would expect socially acquired ways of thinking and acting to reflect the history of the individual and to have a significant and enduring effect on an individual's learning and development. This may all sound rather intuitive, but such patterns have been difficult to document in the past. The evidence here points to the importance of attending to the cultural composition of our student populations during the design and implementation of undergraduate curricula, and to the need for further research addressing the questions that this study generates. Would the results of our study have been different in a different practicum context? Or at a different Fifth Dimension site? Clearly the changes we observed emerged over time. How much time is necessary for lasting change to occur? What encourages or discourages these changes? Are certain curricula or practicum experiences more effective in promoting change?

To summarize, this study revealed three different predispositions among our incoming undergraduates toward education, as well as evidence that the information and experiences our undergraduates encountered in our academic service-learning class were filtered and organized by these predispositions in ways that were consistent with others sharing the same pre-term attitude structures. This does not imply that all of the students on one factor have the same sets of values, but that they have all subjectively weighed the information presented to them and arrived, possibly from quite different perspectives, at the attitude represented by that factor. Uncovering our students' attitudes toward education offers insights about how students from varying educational or cultural backgrounds might learn, or infer, relationships

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between the concepts we present in class and their observations and experiences at the practicum site. It is our belief that hands-on application of the course material and active involvement with others who are also grappling with the same ideas allow new perspectives to "settle" or to become integrated parts of the students' repertoires in ways that are not possible in traditional lecture classes. Our experience here speaks to the need for flexible programs that are responsive enough to provide students with varying culturally acquired ways of thinking rich contexts for academic and personal development.

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		Factor Loading		Loading	
		A	B	A	B
CEf	Sr.Com/HDP. Lang:English. Cult:American/Anglo (MBA)	I	69*	81*	19
JGf	Sr.Com/HDP. Lang:English. Cult:American/Anglo (MD)	I	81*	60*	36
MaCf	Sr.Com. Lang:English/ ltd. Chinese. Cult:4 <sup>th</sup> Gen American (PhD)	I	56*	46*	4
SSf	Sr.Com. Lang:English. Cult:American/Anglo (AA)	I	48*	56*	10
VRf	Sr.Com. Lang:English. Cult:American/Anglo (BS)	I	45*	65*	25
ARf	Jr.Psych/HDP. Lang:English. Cult:American Anglo (BA)	II	56*	46*	17
BNf	Sr,HDP.Lang:Eng & Swedish. Cult: American,Swedish (HS)	II	56*	14	46*
CLf	Sr.Com. Lang:Chinese/English. Cult:Chinese, Came to US at 7. (JD)	II	59*	40	71*
MoCf	Sr.Com.Lang:Chinese/English. Hong Kong until 7,Canada until 18(MA)	II	42*	10	52*
NYm	Sr.Com. Lang:Chinese/English. Cult:HongKong/US for college (PhD)	II	50*	14	52*
AAf	Sr.Com. Lang:Armenian/Arabic/Eng. Canadian, US for College (AA)	III	42*	58*	34
CSf	Jr.Com/HDP,Korean/Span. Peru mother, Korea Father. US for College(MD)	III	42*	27	46*
LSf	Sr.Com.,Lang:Korea, Eng.,Korean, Came to US in middle school (BS)	III	50*	46*	32
NTf	Jr.Com.,Lang:Eng. Ltd Chinese, Cult: 3 <sup>rd</sup> Gen American (BA)	III	42*	54*	38
PSf	Jr.Com.,Lnag:Chinese, Cult:Hong Kong, Came to US for College(MBA)	III	52*	66*	30
SOf	Jr.Psych/HDP. Norwegian/Eng. US Father Lived in Norway 10-18(HS)	III	68*	67*	40

**Appendix 1: Factor loadings for participants with student descriptives**

<i>Id.</i>	<i>Student Descriptors</i>	<i>Pre-term</i>	<i>Post-term Factor</i>
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**Appendix 2a: Pre and post term item scores (1-40 traditional)**

#	Statements	Pre			Post	
		I	II	III	A	B

1	Once perfected, a good learning activity can be successfully duplicated in many different settings.	-3	5	0	-1	4
2	Teachers must keep order in their classrooms.	-1	5	-4	-2	-5
3	Teachers should expect their students to be respectful.	0	3	-2	-3	-2
4	Students learn best from teachers who are educated in top tier universities and stay up to date on all of the latest technological learning innovations	-5	-5	-6	-4	-3
5	Teaching involves the transfer of information from the teacher to the student.	-3	0	-1	-4	-1
6	Teachers teach students how to learn.	1	-2	-2	2	-4
7	Deep down we are all alike.	-2	-4	-3	-7	6
8	Meaning is passed from the teacher to the student.	-1	-6	-1	-3	-4
9	Teachers are most effective when they are teaching a concept that they are highly proficient in.	-1	-5	-3	-1	-6
10	A good teacher gives well defined instructions and explanations.	0	2	-2	-1	-2
11	Good teachers demand that students pay attention.	-3	-3	-2	-4	-3
12	The more the teacher knows about a subject the better teacher he or she can be.	-2	-1	0	-1	-1
13	Being a good observer is important to learning.	1	1	3	1	3
14	Learners respond to firm guidelines.	-7	-2	-4	-5	-7
15	Children need quiet alone time to study.	0	-2	-1	-3	-3
16	Children want to be successful adults someday.	3	3	-2	2	1
17	Learning is accomplished through repetition and practice.	0	3	5	-2	2
18	Teachers set goals according to state curriculum.	-1	-2	-5	0	-1
19	Children are motivated by the need for approval and acceptance by their teachers.	-2	2	6	0	4
20	Careful listening is the key to good learning.	1	1	0	1	0
21	Good learners are able to sit still and pay attention to their teachers.	-4	-1	-3	-5	-2
22	A good memory is important to successful learning.	0	-1	0	-2	1
23	Successful learners are eager to participate in further learning experiences.	2	4	2	2	4
24	Poor learners are not interested in learning.	-6	-1	-5	-6	-5
25	Some children do not want to learn.	-5	-1	-2	-5	-7

	others.					
27	Students learn best when they first learn the subject matter thoroughly and are then given the opportunity for 'hands-on' application of newly acquired knowledge.	-4	-7	-3	-4	-2
28	A short attention span is a frequent cause of poor learning.	-3	-2	-4	-3	-1
29	Children learn best if their language skills are well developed.	-2	0	0	0	1
30	Intelligence is mostly a matter of biological inheritance.	-7	-5	-6	-7	-3
31	Most girls' brains do not allow them to learn math as easily as boys.	-6	-4	-7	-6	-6
32	Boys are naturally more interested in technical subjects than girls are.	-6	-3	-7	-5	-1
33	Tasks learned in one context can usually be accomplished in another.	1	0	1	0	-1
34	Some children learn best on their own, others learn best in group activities.	-1	-2	2	-1	0
35	Learning can be measured by asking the child to explain what he/she has learned.	-2	-6	-4	-2	-3
36	Learning can be measured using standardized tests, like SATs.	-4	-4	-2	-6	-4
37	The success of a program can be measured by the children's improvement on standardized measurements of math and language skills.	-5	-6	-4	-3	-6
38	It is possible to devise standardized methods of testing student progress that are not culturally biased.	-4	1	-3	-2	-2
39	A highly intelligent child will learn easily no matter what the learning context or subject matter is.	-3	-3	0	-1	-3
40	Children learn best when they are not distracted by other children who are also trying to learn the same task.	3	0	1	4	2

#	Statements	Pre			Post	
		I	II	III	A	B
26	Some cultures value learning more than	2	1	1	-2	2

Appendix 2b: Pre and post term item scores (41-80 dialogic)

#	Statements	Pre			Post	
		I	II	III	A	B

41	No two learning occasions are exactly the same.	4	5	2	4	-2
42	Teachers develop activities that promote social interaction.	1	4	-1	1	3
43	Teachers must earn the trust of their students.	3	6	3	4	3
44	Students learn best from teachers who understand the cultural experience that each child brings into the classroom.	1	1	2	3	0
45	Teachers create contexts for assisted learning.	2	0	0	3	-5
46	Teachers take a supporting role in the learning process.	4	4	4	4	2
47	It takes time and effort to recognize our own cultural patterns, understand others, and make the adaptations necessary to create a successful learning environment.	7	1	6	6	5
48	Meaning is constructed through social interaction.	3	2	6	5	7
49	Teachers can learn from their students.	6	4	4	5	-1
50	Teachers mediate interactive learning practices.	3	3	0	3	1
51	Learners often behave independently of their teachers.	1	0	-4	0	-4
52	Teachers and students can learn a task together	-1	0	2	2	1
53	Active participation is important to learning.	2	2	7	3	7
54	Students learn by teaching others.	0	1	1	1	2
55	Learners become more independent as they become more proficient.	-2	0	1	-1	5
56	Children want to be successful children today.	-1	0	-1	0	-1
57	Learning is accomplished through observation and imitation.	4	7	4	3	5
58	Teachers provide learning environments rich with opportunities for students to learn the skills they need.	-1	-3	0	1	-2
59	Children are motivated by the desire to learn.	2	-3	1	2	0
60	Good learners take active roles during learning activities.	-3	2	4	1	1
61	The child brings important resources into the learning experience.	7	1	3	5	4
62	New information is remembered best when a child has an opportunity to use that information in hands-on activities.	5	7	5	6	6
63	Successful learners want to share their new knowledge with others.	0	2	3	1	3

	one of the most important components of a learning activity.					
65	Some children do not believe they are capable of learning.	0	0	-1	0	5
66	The typical American elementary-school classroom is a highly specific learning context that may differ greatly from learning environments in other cultures.	6	3	5	7	6
67	Teachers arrange for children to accomplish tasks with others that the children are not yet able to accomplish on their own.	2	3	-1	2	0
68	Poorly organized learning settings are a frequent cause of poor learning.	5	4	-1	0	3
69	Language skills develop within all interactive learning tasks.	5	5	3	5	2
70	The concept of intelligence is culturally constructed.	3	-1	1	0	4
71	Math learning is often devalued in the socialization of young girls.	1	-4	-5	-1	-5
72	Boys are encouraged to participate in technical learning activities more often than girls .	0	-1	-6	-3	1
73	Skills learned in one learning environment may not be immediately transferable to a different context.	4	0	1	2	0
74	Most children learn best when they are interacting with other children who are also learning the same task.	-2	6	3	1	1
75	Asking children to apply what they have been taught to new tasks is a good method for measuring learning.	5	-3	4	6	2
76	Learning success can be seen as the active participation of the child in a learning activity.	2	-1	2	4	0
77	The success of a program can be measured by how effectively it involves the children in learning activities.	6	2	5	7	3
78	Despite our best efforts, standardized testing does not always accurately reflect the learning or the learning potential of each student.	-4	-7	-5	-2	-4
79	Intelligence is relative to specific contexts and tasks.	-5	-5	-3	-4	0
80	Learning occurs best in group activities.	0	-2	2	0	0

#	Statements	Pre			Post	
		I	II	III	A	B
64	Attracting and maintaining a child's interest is	4	6	7	3	0