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Using Q method to reveal undergraduates' shifts in attitude about teaching and learning in academic service learning contexts

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Our research, grounded in Cultural-Historical Activity Theory (CHAT), 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-sort, 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-sort 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 determined the nature of those changes.

Academic service learning:

In recent years academic service-learning, or the practice of combining an element of service to the community with school-based learning, has become prevalent across a number of disciplines in higher education. Service-learning programs are normally organized around a practicum, or hands-on learning curriculum that is directly tied to the material students are concurrently exposed to in their traditional on-campus classes. Literature on academic service-learning experience consistently lists the many ways these programs have value for undergraduate students.¹ In “Where is the learning in service learning?” Eyler and Giles (1999) show that in community settings students successfully applied the theories they learned in school, and more importantly, in “real-life” situations they thought critically about concepts and questioned assumptions that were taken for granted in the classroom. Community-based experience has also been shown to reverberate back to the classroom, improving the students’ academic performance. Political science majors, studied by Markus, Howard and King (1993), were more likely to apply newly acquired information to novel problems if they were also engaged in academic service-learning programs. There are also several studies suggesting academic service-learning is particularly conducive to personal development. Pisano & Rust (2007), for example, find significant effects of participation in service-learning in four distinct areas; career influence, personal growth, cultural perspective, and civic responsibility. (See also Mullany, 2005; Plann, 2002; Wilson, 2005) These kinds of results are difficult to generalize, however. Not only is each program a unique blend of university and community resources, and constantly in a state of flux as it responds to changes

¹ The U.S. Department of Education reports service-learning instructional strategies result in gains in academic achievement, decreases in 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 and 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. (<http://www.ascd.org/educationnews/kids/kids072002.html>.)

within and between these constituent parts, but the 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 affordances and desired outcomes built into its own curriculum, and with the student population in mind.

The academic service-learning program we examine is conducted within a regularly-scheduled upper-division undergraduate class, Comm115/HDP115 “The Design of Social Learning Contexts.” Students enrolling in the class come from Communication, Human Development and Education Studies majors. 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, mediational means, past experience and active engagement in meaningful activities are believed to play pivotal roles in learning outcome. We work here to counter many traditional or ‘conduit’ teaching models where information is assumed to be unproblematically handed to students in neat little packages that can be stored and called upon when needed. The course curriculum addresses this goal 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, detailed field notes, and in depth personal reflections; second, the course material explicitly lays out the dialogic teaching philosophy and requires the undergraduates to apply the model as they participate in the design and maintenance of the grade 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.² This interactive system of teaching and learning, the Fifth Dimension model, is the product of Mike Cole’s conviction that a cultural-historical activity theory of mind (CHAT) provides the most productive framework for designing optimal contexts for cognitive development. Therefore we look to CHAT for the appropriate conceptual guidelines necessary to ask and answer questions about the effectiveness of the Fifth Dimension programs.

The compatibility of Cultural-Historical Activity Theory and Q Methodology:

The basic concepts underlying cultural-historical activity theory were formulated by Russian social psychologist Lev Vygotsky (1896-1934) and his colleagues A.R. Luria and A.N. Leonit’ev. Their impulse was to counter the tide of classical scholars who insisted on looking at events solely in terms of their constituent parts. They sought to practice *romantic science*, a term they credit to German scholar Max Verworn. In Luria’s words:

“Step by step they single out important units and elements until they can formulate abstract, general laws. These laws are then seen as the governing agents of the phenomena in the field under study. One outcome of this approach is the reduction of living reality with all its richness of detail to abstract schemas. The properties of the living whole are lost, which provoked Goethe to pen, “Gray is every theory, but ever green

² The university course was designed as an integral part of Mike Cole’s “Fifth Dimension,” a multi focused educational activity system offering school age children an after school program aimed at improving basic literacy skills, college students much needed practicum experiences, and researchers the opportunity to observe the micro processes of learning and development in natural contexts. See Cole, 2006.

is the tree of life." Romantic scholars' traits, attitudes, and strategies are just the opposite. They do not follow the path of reductionism, which is the leading philosophy of the classical group. Romantics in science want neither to split living reality into its elementary components nor to represent the wealth of life's concrete events in abstract models that lose the properties of the phenomena themselves. It is of the utmost importance to romantics to preserve the wealth of living reality, and they aspire to a science that retains this richness." (Cole, Levitin & Luria, 2005, p.173)

Cultural-historical activity theory is a genetic, holistic approach to understanding human behavior. It acknowledges that the human interactions we observe are discretely situated in time and place and that these interactions are, to varying extents, constrained by their unique histories and locations. Central to CHAT is a belief that all human activity is mediated by the lived experience of other humans, those living in the past and the present. This store of experience, in the form of artifacts (ie: material goods, signs, and ways of thinking and acting) becomes the fabric of our daily lives. Vygotsky saw the accumulation of these mediational means as a human tool kit that is boundless and continually expanding. He held that cognitive tools like language, maps, math practices, grammar, clothing, or patterns of thought and behavior dramatically change the way we interact with the world (Wertsch, 1985).

Within cultural-historical activity theories, language is an elemental artifact that, together with attitude, plays a constitutive and generative role in all human interaction. Vygotsky refers to language as "...a dynamic system of meaning in which the affective and the intellectual unite. Every idea contains a transmuted affective attitude toward the bit of reality to which it refers" (Vygotsky, 1988). He describes a reflexive internal arrangement or disposition that is shaped through social interaction, and the resulting positioning of oneself among objects and within social events. These positionings reflect 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. Vygotsky, as interpreted by Wertsch, observed that before language is internalized into a tool of thought it must first be used in interaction between adult and child as a means of communication and shared activity. From this observation he theorized that cognitive development appears twice, first in interaction between people, and then within the child. By extension all higher forms of knowledge must originate in collaborative dialogues before they can be internalized (Wertsch, 1991). It is here that the affinity between CHAT and Q methodology are most apparent. Concourse theory, integral to Q methodology, also treats knowledge as a social phenomenon, 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, 2007, p.727). "Communicability," Brown, et al tell us, "is inherently contestable, infinite in principle, ubiquitous in character, and inescapably subjective...it is also unpredictable, paradoxical and erratic." (727) Q sort was developed as a way to make sense of this irreducible subjectivity, a means of mapping how individuals think about a particular topic of interest. While CHAT allows us to look at attitudes about teaching and learning as socially constructed patterns of thinking, as a dynamic states of readiness, organized through social experience, and capable of impacting responses to all related situations and objects, Q methodology provides a way to reveal these patterns as they take shape in the communications around teaching and learning, exposing them to our scrutiny and analysis.

Here 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. In “The Logics of History” William H. Sewell regards culture as the “preeminent site of structure” (126) and draws from Anthony Giddens to expose the dual nature of culturally developed structures that shape human thought. Structures are at once the prime resource for and the product of human interaction. As human agents we organize our structurally formed capabilities to work for us in innovative ways. It’s possible then that our actions may reshape the very structures that make action possible in the first place. Because these structures are multiple, interdependent and vulnerable to the social encounters that they make possible, we are obliged to think of them in terms of processes rather than stable states, processes that interact forming complex ecologies or cultures of thought. Once again concourse theory resonates with CHAT. Within the concourse 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” (727). They use it to describe the “methodological character” (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 (here) pedagogic activities, both in and out of formal educational settings, as novices and as mentors. In turn, the structures we use may be transformed in the process (Sewell, 2006).

Cultural-historical activity theory and concourse theory provide a vantage point from which we can observe our undergraduates as they come to us from a broad array of cultures, each with its own interwoven structures, each with 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.

We use Q sort here to examine the patterns of thought our students bring into the practicum experience. We then offer them suitable spaces and appropriate tools for critical analysis of their existing ideas about teaching and learning and an opportunity to cultivate new patterns of thinking through hands on application of the theories they are exposed to in their traditional classes. At the end of the school term the students repeat the identical Q sort task and we compare the pre and post measures for evidence of attitude change. This method provides a means of evaluating our program with the ultimate goal of providing ever better contexts for undergraduate development.

We find Q sort to be a particularly appropriate tool for exposing subjective attitudes and their structures. Not only are we able to answer questions about the range of communicated ideas within our specific area of interest, but we are able to expose the prevalent variations of those ideas, and understand how these variations are related to one another. Going into this study we were most concerned with finding a method that would both allow us to “hear” what the students had to say and provide space for qualitative interpretation by researchers who are themselves embedded in the activities they are investigating. We were drawn to Q sort as it respects the integrity of the respondent by treating all of the responses from an individual participant as an integral package and produces factorial results that cannot be predicted. At the same time Q sort

offers a means of viewing the results from different angles in order to choose a solution that best describes the complex reality we are investigating.

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, MC, 2006).

This typical quote from one of the student’s reflections demonstrates how they 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, Sagrue (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, they come to filter and to color the course material and practicum experiences the students encounter.

As we discussed above, both the educational design of the course and the material taught in comm115 are grounded in cultural-historical activity theory (CHAT) and therefore in the belief that the quality of any learning experience directly correlates with the richness of communication among members of the learning community, and the extent to which ideas can be shared (Cole, 1996). Within CHAT learning is inextricably linked to community, to daily activities, to conversations, and to the maintenance of relationships. 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. Of the sixteen students³ (fifteen females, one male, all 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 and Arabic(1). All but two of the students have at least one parent who is English proficient. The highest education level attained by both parents was 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 degrees or post graduate credentials, seven bachelor degrees, six two-year credentials, and four high school diplomas.

³ Nineteen undergraduate Communication, Human Development and Psychology majors participated in the pretest portion of this study, but three were unable to take the post-test. Our analysis is based on the q sorts accomplished by the sixteen students who participated in both phases of the study.

From field notes to concourse:

For Stephenson, the flow of communication is the “*very stuff of life;*” from the communications around any given topic new meanings emerge, new ideas are born, creativity, discovery and identity formation happen (Brown, 1993, p.95). 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 this sampling becomes a set of statements⁴ developed by the researcher to describe the subjective perspectives of the participants. For almost two decades the Fifth Dimension has been archiving the concourse that both sustains and describes the program. This is accomplished in the form of field notes, often accompanied by video or audio recordings, submitted daily by participants at every level of involvement to an online central database.⁵ These notes follow a prescribed format, describing the students’ overall first impressions of the site, the children they interacted with, a detailed account of the activities they engaged in, and finally, the students’ reflections on the day, which are (ideally) informed by the readings and discussions in the course. These notes are available to the other students in the class who are encouraged to read and comment on their colleagues’ submissions. At the end of the day, the professor and researchers read and respond, once again, 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. The concourse sample for the present study was drawn from this source, and it is to this archive that we returned for cues in interpreting the Q-sort results.

The core set of sample statements was taken verbatim from the field notes. The primary goal of the 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. Specifically we were looking for a shift from a traditional “conduit” paradigm, to the more social understanding being modeled and discussed in the course. In order to isolate this type of development, the concourse 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 concourse 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.

A set of 80 statements was selected from the original set of 120 statements taken from the concourse mentioned above. Statements were culled to prevent repetition and those without an appropriate ‘counter statement’ were excluded. The 80 statements are included as appendix 1 and referred to in the narrative descriptions and tables that follow. 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

⁴ While a typical Q concourse is built from words or sentences, a concourse may also include virtually any artifact, photos, scents, short musical statements, and the like.

⁵ <http://www.lchc-resources.org/fieldnote/index.pl>

order before each use. Participants were given a matrix to use in sorting and ranking the statement set into a forced quasi-normal distribution.

The Q sort tasks were administered individually during the first week of class.⁶ A facilitator was on hand during the testing to discuss the directions and advise the students on the mechanical aspects of the 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. They would then re-read and rearrange the cards, moving them between piles until they were satisfied that the order represented the way they were thinking about the subject at hand. Eventually this arrangement came to resemble the quasi-normal distribution on the response grid. At this point, the student would begin at one side or another and enter the numbers on the cards in the spaces on the matrix provided.

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 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 varimax rotation to reveal the simple structures, or the “centers of gravity embedded in a correlation matrix” (Brown, 1980, p.40). Preliminary analysis of the preterm data involved solutions ranging from two factors to six factors and clearly revealed the presence of either three or four factors. These were hand rotated to isolate three distinctive and coherent factors that accommodated all 16 of the undergraduate students and accounted for 55 percent of the variance in the data.

After the preterm but before the post-term Q-sorts, in an effort to better understand the factors that were revealed, the statements were separated into four categories: 1.) those that expressed attitudes about the role of the child in learning contexts (*being a good observer is important to learning / active participation is important to learning*) 2.) those that dealt with the role of the teacher (*a good teacher gives well defined instructions and explanations / good teachers mediate interactive learning practices*) 3.) those about teaching theory and methods (*Learning can best be measured by asking the child to explain what he or she has learned./ Asking a child to apply what they have been taught to new tasks is a good method for measuring learning.*) 4.) those about learning contexts and cultural influences (*children learn best when they are not distracted by other children/ children./ Children learn best when they are interacting with other children who are also learning the same concepts.*) These categories are soft and not exclusive but allowed us to look at the ways some of the more particular concepts came together in the development of a larger understanding of the nature of teaching and learning.

Preliminary analysis of the post-term data revealed the possible presence of four or five factors, two of which contained one sort each. Using hand rotation we were able to determine two

⁶ On the first day of class students sign an “assent to be in a research study” form approved by the UCSD Human Research Protection Program on 3/9/2005, expired 2/1/2008, in the process of renewal. The undergraduates understand that all class activities including class conversations, participation at the site, all field notes, reflections and class assignments, will be used by researchers at the Laboratory of Comparative Human Cognition. The names used in this paper are fictitious. Similarly, parents of the children at the practicum sites sign approved assent forms and these children’s names have been changed in this report as well.

coherent factors that accommodated all sixteen students and accounted for 57% of the variability in the data. 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 (those that the entire test population was in agreement on). We considered the extent to which the members of a group favored statements we had originally categorized as “conduit” or “dialogic”. Similarly we were interested in which of the subsequent categories (“method/theory,” “context/culture,” “teacher,” or “student” oriented) were most and least important to the students. 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 for the most part consistent with the cultural groups that were represented in the class. This is discussed in more detail below.

RESULTS

Table 1 below displays the factor loadings for the 16 participants in the preterm and post-term phases of our study. The item scores for those statements most associated with a conduit or top-down teaching models (statements 1-40) are listed in table 2. The scores for those statements associated with dialogic models of teaching (statements 41-80) are listed in table 3.

[Table 1. Factor loadings for FA06 participants with student descriptives – about here]

[Table 2. Item scores 1-40, statements associated with conduit teaching models. – about here]

[Table 3. Item scores 41-80, statements associated with dialogic teaching models – about here]

Pre-term consensus statements:

There were eleven consensus statements that emerged from the final graphical rotation of the factors in the preterm q-sort. 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 did both agree upon, and feel 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.

Description and interpretation of factor I: focus on the value of the child

This group is distinguished by the emphasis placed on the intrinsic value and potential of each child. One of the two statements members of factor I ranked above all others, #61, “*The child brings important resources into the learning process*” 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, F06). There is enormous responsibility placed by this group on the teacher. The other top ranking statement was #47, “*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.*” First and foremost, this group expected the teacher learn about the individual needs of each student and to adjust the learning environment to meet those needs. Ranked immediately behind these statements were statements that iterated other obligations that the group associated with teaching, for example, to create optimal contexts for learning (45) and to mediate learning practices (50).

We looked to the field notes from members of factor I and found repeated reference to the need for teachers to “tune in” and listen to their students. In the second week of class SSf captured the group’s viewpoint on the relationship between teacher and student in the following comment, “*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, F06)

PCQ identified five items distinguishing factor 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, #59, *“Children are motivated by the desire to learn.”* higher than either of the other groups did. Unlike members of the other groups, those in factor I de-emphasized the need for active student participation (60) and the value of group activities (74).

Negatively weighted statements like #25, *“Some children do not want to learn.”* and #5, *“Teaching involves the transfer of information from teacher to student.”* taken in conjunction with highly weighted statements like #43, *“Teachers must earn the trust of their students.”* and #49, *“Teachers can learn from their students.”* 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, #30, *“Intelligence is mostly a matter of biological inheritance.”* and #14, *“Learners respond to firm guidelines.”*

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).

Description and interpretation of factor II: kids need structured learning environments

Members of group II 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). Valuing 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) 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,#75) Notably, members of this group gave highest ratings to the statements #2, *“Teachers must keep order in their classrooms”* and #1, *“Once perfected a good learning activity can be duplicated in many different contexts”* while members of the other two factors weighted both of these statements negatively.

Reflecting on her first days in the program, CLf 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 disciplinary. I had to find ways to ease into the role of being a friend as well while being productive with the children.”* 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, FA06). 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.

Description and interpretation of factor III: active participation is the key to successful learning

Students loading onto factor 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 circle around this theme which also appeared early on in the students' notes. For example, NTF complained that the activities we were providing were not exciting enough for some of the kids and in doing so 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."*

Statements #16,#19,#53,#68 and #72 were identified by PCQ as those distinguishing factor 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). And the only group to assign a negative value to *"Children want to be successful adults some day"* (#16. Factor 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 comment in PSf's field notes, *"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, FA06) Factor 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.

Description and interpretation of factors emerging from the post-term Q sort:

Two factors accommodated all 16 of the undergraduates in the post-term q-sort. The significant factor loadings reveal that all five of the pre-term factor I group factored into group B of the post-term q-sort, as did all but one of the pre-term factor III group. Likewise, pre-term factor II, with one exception, stayed together as factor B in the post-term results.

Repositioning:

"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 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, FA06).

Paired-sample t-tests between the total points assigned to each statement in the pre-term and post-term q-sorts revealed a significant shift ($p < .001$) away from the statements associated with conduit teaching models and toward the dialogic models being discussed and practiced in the course. The most precipitous drops in weightings were on those statements that adhered to rigid top-down teaching practices, for example, teachers must keep order (#2), demand that students pay attention (#11), be highly educated (#4), expect respect (#3), and have structured lesson plans

(#11). Also dropping significantly were statements about the value of standardized testing (#36), and about the importance placed on a child's "intelligence" (#9).

The statements that showed the largest increases 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 (#51, #58).

SO of was among the students whose q-sorts reflect this attitude shift. Comments in her final reflection paper support this interpretation, *"I learned that 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."*

While these overall results demonstrate that the desired 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, made up for the most part of students who loaded onto factor II in the pre-term q-sort, proved quite resistant to change. These findings are discussed later in the paper.

Post term consensus statements:

There were 28 consensus statements emerging from the final graphical rotation of the factors in the post-term q-sort, only five of which had also appeared as consensus items in the pre-term results (#4, #11, #33, #54, #56). 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. PSf tells us, *"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."*

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-test results (in bold type below) as items of consensus. In keeping with the results of the comparisons in above section, the PCQ consensus report shows that as a group, the undergraduates attitudes cohere around concerns about cultural awareness, about encouraging children's engaged involvement in learning activities, and about the acknowledgement of and respect for the resources that children bring into the classroom. Conversely, they are united in questioning their earlier ideas that meaning can be passed unproblematically from teacher to student (#8), that poor learners are not interested in learning, and that unbiased standardized testing is possible.

Post-term distinguishing statements:

The most dramatic difference between the two post-term groups was in the weight they assigned to statement #7. *"Deep down we are all alike."* Members of factor A gave this statement their absolute lowest priority, while members of factor B placed it among the five highest priority items. This statement was a quote used in several student's field notes taken from one of the class

readings on coming to terms with privilege (Reitenauer, et al. 2005) and represents an early stage of the adjustment process that many of the students in the program struggle with. The “we are all alike” mindset is often followed by a more complex understanding - that in many ways we are not all alike and 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 Factor A during The first week of class when the Reitenauer reading was assigned.

“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, FA06)

“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 FA06).

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 themselves. While they were usually quite circumspect in their comments, 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 (in factor II) and four of the five factored together in factor B of the post-term q-sort.

On the subject of teachers and teachers’ roles in the learning process, members of Factor A placed much higher priority 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 in Factor 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:

A close examination of the Q results shows that members of pre-term groups I and II converged to create a single post-term factor A. Members of pre-term factor II remained together to create post-term factor B. There were only two exceptions, one student from pre-term III left her group to become part of post-term B, and one member of pre-term II defected to join post-term group A. Group A then, was comprised (with one exception) of those who had (in the pretest) placed highest

emphasis on the intrinsic value of the child, and those who were most concerned with creating learning environments that promoted active student participation. All but one of the students in group B had stressed the importance of highly structured learning contexts in their first sort.

We looked at the extent to which the class as a whole shifted from one teaching paradigm to another using SPSS descriptives. Not only did the mean score for statements supporting the dialogic model increase by 1.150, but the standard variation decreased from 7.939 and 7.348 to 4.806 and 4.974. As a group the students shifted their perspective and became more homogeneous in their views. We then compared changes in weightings by factor groups and found a modest shift in scores between the conduit and dialogic modes in those who went from preI to postA. Those in pre-term III who also factored onto post-term A showed four times as much variation from their original test as did those from factor I. Both groups came to weight the dialogic statements more heavily in the post term test. In contrast, those students who loaded onto pre-term II and post-term factor B demonstrated very little shift, and that shift was away from the desired dialogic model and back towards the conduit teaching philosophy. The striking finding here is that the six students in preIII/postA accounted for more than two thirds of the overall shift between teaching paradigms for the entire class.

Pre-term factor I/post-term factor A:

A more nuanced look at the changes shows that members of preI/postA made a substantial shift in only two statements. On #7 *Deep down we are all alike*, they dropped from a -2 to a -7 weighting, and on statement #26 *Some cultures value learning more than others*, 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. SSf, 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 5th 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”*(SSfFA06). And JGf, also an aspiring teacher, echoes this sentiment in her final reflection paper, *“Working at LCM 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”*(JGfFA06).

Pre-term factor III/post-term factor A:

The students in preIII/postA showed the most extreme changes 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 preIII/PostA 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-sort.

Week 1 – field note reflection

“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. I think the readings were very helpful because they really taught me to practice cultural humility when entering LCM. Since I didn’t know what to expect, I’m really glad I was able to come in with a teachable heart. I was eager to learn and tried not to expect much of anything, but realized just how ethnocentric I am even within the first few minutes, as I looked on with uncomfortably at the visibly small space we would be working in. Thankfully, because the readings had so strongly emphasized how we need to recognize our own culture and see the differences in others, so that we can cultivate both to create a more diverse, multi-cultural community, I was eager to learn more about these children and their home lives. In hearing more about how they grew up, what activities they participate in, and how their families function, I was genuinely excited and cannot wait to learn more next time. I truly think that we can only continue to learn more about each other from here and see the beauty in each of our cultures. There is definitely a lot to be learned from these children and I cannot wait to learn more next visit!”

Week2- Field note reflection

“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” (NTfFA06).

Week 3- field note reflection

“The children at LCM really seem to have a deep sense of genuine care for one another and I am curious as to how this was established, whether it just grew simply out of their constant presence around one another, or if the participation in various activities helped them to grow a mutual sense of respect and care for each other. I think this might be an interesting topic to research and I may consider exploring it more myself” (NTfFA06).

Week 4- field note reflection

“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.... It’s amazing to know that a child’s potential can be reached with just the right amount of help provided and collaborative effort needed” (NTfFA06).

Week8- field note reflection

“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" (NTfFA06).

Week 9- field note reflection

"One interesting thing I noticed today was simply how little Juan was unashamed of his Spanish heritage. Unlike most of the other children here, he was more than willing to utilize both Spanish and English. It was fairly easy for him to transition and use both languages interchangeably, as well as translate some of the English terms for me. He was actually proud of his heritage, unlike most of the other children here and it reminded me that Juan might be this way, only because he is only three and hasn't yet been polluted by the educational system, which emphasizes the superiority of English. 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" (NTfFA06).

Week10- response to a colleague's field note

"It definitely seems as though Juanita has found a dear friend in you! When I was at site on Tuesday, Annal was commenting on how Juanita didn't want to play with anyone because she was "waiting for BNf." 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! =)" (NTfFA06).

Pre-term factor II/post-term factor B:

In direct contrast to the responses of those in pre-term group I, members of preII/postB (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 -3 to +6. Other noteworthy attitude changes for this group were on items #49 *Teachers can learn from their students* (-5), and #51 *Learners often behave independently from their teachers* (-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 q-sort. We have included portions of CLF's weekly notes below to demonstrate how, unlike NTf above, members of this group maintained a consistent mindset throughout the term.

Week 1- field note reflection

"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 lead to believe that there would be negative effects for these children who aren't getting as much attention" (CLfFA06).

Week 2- field note reflection

“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 feel like we have a lot of work to do with Isabel as far as her reading skills go. She is behind for her age, and therefore, I will be keeping in mind that she needs to work on that. Isabel asked me today when I would be back. I felt extremely fulfilled and accomplished” (CLfFA06).

Week 3- field note reflection

“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. In circumstances like today, when A 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.” (CLfFA06).

Week 4- field note reflection

‘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? ’ (CLfFA06).

Week 5 – field note reflection

“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. Then Alicia would say my name over and over again because she wanted to tell me something. Isabel then said to me, “See. You’re doing it again. You’re talking to Alicia.” I responded with, “Well, even when I’m not talking to her, you’re not working on your homework anyway.” 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” (CLfFA06).

Week 8 – field note Reflection

“Today’s experience really had me thinking about the purpose of 5th 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. It is so emphasized that we need to just be there to be their friend and also that simply being their friend is already making a contribution to their lives. However, I really started to think is that tiny bit of contribution enough? If we aren’t contributing enough to make an impact then I feel like we aren’t doing what we were meant to do. Perhaps we are making a slight difference, but is that slight difference enough to better their future? 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? ” (CLfFA06).

Week 9 field note reflection

“I've worked with A a couple times before and I remember the very first time I worked with her, she wanted to do her homework on the playground. She had an extremely difficult time concentrating that day. She didn't seem motivated to do her homework at all. However, when I worked with her this time, she was distracted sometimes but for the most part, she worked pretty diligently on her homework. From this experience, I've learned to definitely not let her do her homework on the play stack anymore” (CLfFA06).

Q sort puts culture back in picture:

An interesting outcome of this study was the way Q sorting exposed patterns of thinking that divided our group of 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 (as well as class, race, and gender) and recognize the intrinsic specificity of social contexts. Instead of seeing these categories as cohesive patterns, we consider them to be a permeable array intersections where the patterns and processes deriving from ethnicity, class, race, and gender interweave. In a second paper, looking specifically at the ‘border work’ being accomplished in this same group of students as they carried out their practicum requirements, we report the following:

“We saw the undergraduates constrained by ways of thinking that were laden with complications from their personal histories. Far from simplifying their situations, we further complicated the students' predicament by offering new tools and perspectives with which to inform and interrogate the judgments and decisions we were asking them to make, and new learning contexts rich in organizing resources designed to provide opportunities and experiences where their often erroneous preconceptions were exposed in a nonthreatening space. We then watched as they became acclimated to this carefully designed practicum environment, chose from the selection of artifacts available to them, and used them to bridge the socioeconomic, language, education and culture gaps they observed between themselves and the local children” (Downing-Wilson, 2007,p.16)

What the Q sort revealed that we did not pick up in the ethnographic study quoted above, 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. This may all sound rather intuitive, but it is an important issue that is often overlooked in curriculum design, and points to the importance of attending to the cultural composition of our student population.

Shortcomings and contradictions:

While the above support from the field notes for the Q results was typical, it certainly does not represent all of the data. The first sets of notes that we examined were those from the two students who broke from their pre term factor groupings and factored heavily into another group in the post term test. ARf, for example, was in preII, those who supported a hierarchical teaching model. She was the only student in this group who factored onto post term factor A, and we looked eagerly to her notes for an account of experiences that promoted her change in perspective. While her notes did nothing to contradict the q-sort results, they gave us no concrete support either, focusing instead on the warmth and depth of the relationships she had built with the children, without directly discussing education at all. Similarly, CSf, who factored into preIII and then parted from her group and factored into postB, spent the largest part of her notes discussing the economic differences between herself and the children at the site, and the lessons she had taken away from this exposure to a radically different lifestyle. These examples point out the specificity of the statement set we used, where we directly targeted the topic of education philosophy to the exclusion of other topics.⁷

In one case the undergraduate's field notes and final reflection paper directly contradicted her Q sort performance. NYm wrote extensively on her developing understanding of learning within social contexts, giving detailed examples of her encounters at the site and supporting them with theory from the class readings. In addition, we watched as she became a valued and integral part of the program, interacting in truly inspired ways with the children and the other undergraduates as well. Her Q sort results, preII/postB, show nothing of this progress. 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 NYm, being particularly bright and efficient, dispatched the post term test in the most expedient way possible – by recalling and duplicating what she had accomplished on the pre term exercise. We must keep in mind that there is certainly a lot going on in any given situation that is not captured by the Q technique.

We also feel 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 group preII/postB, those who held steadfast to traditional teaching models, were exceptionally successful in their interactions with the children and in their coursework. One wrote an honors thesis on experiences in the class. There are several ways to interpret these observations. One is that that given their personalities, background 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.

Summary of Fall06 Q investigation:

Q methodology helped us identify three distinct ways of thinking about teaching and learning that students brought with them into the practicum experience. After examining the statements that distinguished these groups, and in light of the students written accounts of their initial reactions to the class, we labeled these groups I *those who stressed the intrinsic value of the child*, II *those who*

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stressed the need for structured learning environments, and III those who stressed active participation. The post term q-sorts using the identical statement set revealed a significant general shift from the conduit to the dialogic perspective, and the presence of only two groups, one accounting for about 2/3 of the class population. Closer inspection showed that groups I and III from the pre-test had collapsed into one larger group in the post-test, and that of the two original groups, group III showed the most significant shift in attitude. Group II from the pre-test, those advocating highly structured learning contexts, remained largely intact, both in the members that comprised it and in the attitudes expressed.

We began by grounding our study in a CHAT model where learning and development are seen as processes that can only be understood within social relationship. We started from the idea that student development would reflect both the self-understanding of the individual and the structural elements of the larger community. In keeping with this line of thinking, we were able to use Q sort to reveal 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. Uncovering our students' attitudes toward education offers insights about how students from varying educational or cultural backgrounds might learn, or infer, relationships between the concepts we present in class and their observations and experiences at the practicum site, and guides us in the design and implementation of new learning contexts.

Many questions remain about how the students' prior beliefs interact with characteristics of the service learning site. Would the results of our study have been different in a different practicum context? 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? 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 points 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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Table 1. Factor loadings for participants with student descriptives

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

#	Statements	Preterm			Post-term	
		I	II	III	A	B
1	Once perfected, a good learning activity can be successfully duplicated in many different settings	-3	0	5	-1	4
2	Teachers must keep order in their classrooms.	-1	-4	5	-2	-5
3	Teachers should expect their students to be respectful.	0	-2	3	-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	-6	-5	-4	-3
5	Teaching involves the transfer of information from the teacher to the student.	-3	-1	0	-4	-1
6	Teachers teach students how to learn.	1	-2	-2	2	-4
7	Deep down we are all alike.	-2	-3	-4	-7	6
8	Meaning is passed from the teacher to the student.	-1	-1	-6	-3	-4
9	Teachers are most effective when they are teaching a concept that they are highly proficient in.	-1	-3	-5	-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	-2	-3	-4	-3
12	The more the teacher knows about a subject the better teacher he or she can be.	-2	0	-1	-1	-1
13	Being a good observer is important to learning.	1	3	1	1	3
14	Learners respond to firm guidelines.	-7	-4	-2	-5	-7
15	Children need quiet alone time to study.	0	-1	-2	-3	-3
16	Children want to be successful adults someday.	3	-2	3	2	1
17	Learning is accomplished through repetition and practice.	0	5	3	-2	2
18	Teachers set goals according to state curriculum.	-1	-5	-2	0	-1
19	Children are motivated by the need for approval and acceptance by their teachers.	-2	6	2	0	4
20	Careful listening is the key to good learning.	1	0	1	1	0
21	Good learners are able to sit still and pay attention to their teachers.	-4	-3	-1	-5	-2
22	A good memory is important to successful learning.	0	0	-1	-2	1
23	Successful learners are eager to participate in further learning experiences.	2	2	4	2	4
24	Poor learners are not interested in learning.	-6	-5	-1	-6	-5
25	Some children do not want to learn.	-5	-2	-1	-5	-7
26	Some cultures value learning more than others.	2	1	1	-2	2
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	-3	-7	-4	-2
28	A short attention span is a frequent cause of poor learning.	-3	-4	-2	-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	-6	-5	-7	-3
31	Most girls' brains do not allow them to learn math as easily as boys.	-6	-7	-4	-6	-6
32	Boys are naturally more interested in technical subjects than girls are.	-6	-7	-3	-5	-1
33	Tasks learned in one context can usually be accomplished in another.	1	1	0	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	-4	-6	-2	-3
36	Learning can be measured using standardized tests, like SATs.	-4	-2	-4	-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	-4	-6	-3	-6
38	It is possible to devise standardized methods of testing student progress that are not cultural biased.	-4	-3	1	-2	-2
39	A highly intelligent child will learn easily no matter what the learning context or subject matter is.	-3	0	-3	-1	-3
40	Children learn best when they are not distracted by other children who are also trying to learn the same task.	3	1	0	4	2

#	Statements	Preterm			Post-term	
		I	II	III	A	B
41	No two learning occasions are exactly the same.	4	2	5	4	-2
42	Teachers develop activities that promote social interaction.	1	-1	4	1	3
43	Teachers must earn the trust of their students.	3	3	6	4	3
44	Students learn best from teachers who understand the cultural experience that each child brings into the classroom.	1	2	1	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	6	1	6	5
48	Meaning is constructed through social interaction.	3	6	2	5	7
49	Teachers can learn from their students.	6	4	4	5	-1
50	Teachers mediate interactive learning practices.	3	0	3	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	2	0	2	1
53	Active participation is important to learning.	2	7	2	3	7
54	Students learn by teaching others.	0	1	1	1	2
55	Learners become more independent as they become more proficient.	-2	1	0	-1	5
56	Children want to be successful children today.	-1	-1	0	0	-1
57	Learning is accomplished through observation and imitation.	4	4	7	3	5
58	Teachers provide learning environments rich with opportunities for students to learn the skills they need.	-1	0	-3	1	-2
59	Children are motivated by the desire to learn.	2	1	-3	2	0
60	Good learners take active roles during learning activities.	-3	4	2	1	1
61	The child brings important resources into the learning experience.	7	3	1	5	4
62	New information is remembered best when a child has an opportunity to use the information in hands-on activities.	5	5	7	6	6
63	Successful learners want to share their new knowledge with others.	0	3	2	1	3
64	Attracting and maintaining a child's interest is one of the most important components of learning activity.	4	7	6	3	0
65	Some children do not believe they are capable of learning.	0	-1	0	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	5	3	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	-1	3	2	0
68	Poorly organized learning settings are a frequent cause of poor learning.	5	-1	4	0	3
69	Language skills develop within all interactive learning tasks.	5	3	5	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	-5	-4	-1	-5
72	Boys are encouraged to participate in technical learning activities more often than girls.	0	-6	-1	-3	1
73	Skills learned in one learning environment may not be immediately transferable to different context.	4	1	0	2	0
74	Most children learn best when they are interacting with other children who are also learning the same task.	-2	3	6	1	1
75	Asking children to apply what they have been taught to new tasks is a good method for measuring learning.	5	4	-3	6	2
76	Learning success can be seen as the active participation of the child in a learning activity.	2	2	-1	4	0
77	The success of a program can be measured by how effectively it involves the children in learning activities.	6	5	2	7	3
78	Despite our best efforts, standardized testing does not always accurately reflect the learning or the learning potential of each student.	-4	-5	-7	-2	-4
79	Intelligence is relative to specific contexts and tasks.	-5	-3	-5	-4	0
80	Learning occurs best in group activities.	0	2	-2	0	0