

Walking the Talk: The Complexities of Teaching about Teaching

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Overview

This paper describes and evaluates an attempt to enact pedagogical principles grounded in a neo-Vygotskian framework in an undergraduate level course at a major research university in the United States. The course, 92B: *Introduction to Theories of Education*, is one of three courses required of undergraduates who decide to minor in education at this university. The course may also serve to fulfill the university's GenED requirements. Offered once each year, the course typically attracts a large number of undergraduate students (300+) from across all disciplinary majors and class years, many of whom are considering a career in teaching.

The paper begins with a consideration of evolving approaches to pedagogic practice in public education. A discussion of several calls for an alternative to the didactic lecture-style format of large undergraduate introductory courses follows. Largely, we argue, school routines, roles, and identities, are historically sustained by broad institutional forces shaping several sectors of public life in the U.S. Large lecture formats in undergraduate study are no exception. The discussion then moves to explicate the alternative course design we created to supplement a didactic lecture format, and the neo-Vygotskian rationale guiding that design process. Next, a brief description of the methods used to assess the students' response to various aspects of the course is followed by the results of that analysis. The paper concludes with a discussion of: the student experience of the course as an interruption or contradiction in their institutional careers as "good students"; the ways in which such interruptions serve as "occasions for sensemaking" (Weick, 1995); and the sensemaking strategies students employed when faced with institutional interruptions.

Epistemological Trajectories

Institutional forces are ubiquitous in public life, and especially in the American educational system. Here, *institutionalization* is characterized as a process that serves over time, to structure or organize macro-level systems of social interaction and conduct: the rules, regulations, implicit norms and taken-for-granted definitions that shape activities in organized environments. Generally, institutional theory examines the interdependent relations between formal organizations and the wider cultural-historical environment. In particular, this perspective emphasizes the ways in which the activities of an organization are legitimated, and thus stabilized, by their adherence to prominent and public ideological values (Scott, 2001). An institutional perspective considers how organized activities may be structured by dominant, normative ideologies although these infused norms may not support the *technical* goals of the organization, or needs of individual patrons, directly. Contrasting different models of institutionalization, Selznick (1957) predicts that organizations with less ambiguous products or outcomes and more precisely defined goals (where these are supported by a clear division of labor and consistent task-based, means-ends operating sequences - what organizational theorists refer to as the “technical core”), are less subject to institutional forces than organizations with multiple and ambiguous goals, outcomes, served by a complex, interdependent, and changing “technical core”. According to Scott (2003), institutional forces take on three major forms, some more explicit or visible, and others more subtle or invisible. In other words, institutions include *formal structures* - explicit and enforced regulatory mandates or rules - *normative structures* - publicly shared ideological commitments that serve to qualify a sense of what is obligatory - and *cultural-cognitive structures* - “taken for granted” expectations, assumptions, shared meanings or internalized cognitive frameworks that support communication and goal-oriented joint activity . This paper emphasizes the third – the pervasive cultural/cognitive structures that are not readily available to the “conscious awareness” of the agents enacting them yet that consistently inform their decisions and interactions.

In order to understand the institutional environment shaping the organized public education system in the United States it is important to consider its history. As Tyack

(2001) and Rogoff (2003) among others have shown, many of the defining institutional features of public education in the U.S. remain rooted in the empiricist epistemology established and amplified in response to the nation's nineteenth century industrial revolution. This era was characterized by the sudden and rapid growth of urban centers and immigrant populations, creating a sense of chaos and conflict that gave rise to a corresponding demand to subdivide, organize, regulate, and routinize political and public services. Impacted by rapid technical improvements, and the economic success of assembly-line production for retail markets, American values shifted. Harris (1969) describes the changing ideological landscape during the industrial period as one that increasingly, favored "precision, accuracy, consistency and implicit obedience to the head or directive power," seeing it as necessary for "the safety of others and for the production of any productive results."

In many respects, school reforms were intended to serve similar functions. According to Tyack (1974), educational leaders in the second half of the nineteenth century focused increasingly on the aggregate collective function of school for society, as compared to the welfare and development of individual children. Meanwhile, the ideologies that helped to organize urban centers, gave rise to what Rogoff (2003) describes as the "factory model" of education. Generally, the provisions of the "factory model" are grounded in positivist assumptions about knowledge as a product; namely that knowledge is a *thing* rather than a *process*, a thing that can be unitized, replicated, sorted, dispatched, acquired and stored (Wells, 1999). The model is one that relies on a hierarchy of control, a set curriculum, direct instruction (where explicit procedures and abstract definitions are presented by an authority figure and reproduced by students¹), an emphasis on pedagogical "products" (student outcomes) and decontextualized, standardized assessment criteria. As Rogoff (2003) explains, teachers in this model were cast as "technical workers who were supposed to insert information into children" and

¹Engestrom (1987) further specifies this practice making use of Leont'ev's concepts: "In [traditional] school-going text takes the role of object. The object is molded by students in a curious manner: the outcome of their activity is above all the same text reproduced and modified orally or in written form." (*in* Miettinen, 1999 p. 326)

students were seen as “receptacles,” while “information itself was broken into bits to be delivered in a specified sequence like an assembly line.” (p. 181)²

Thus, the industrial era is largely responsible for the institutionalization and proliferation of normative standards that value efficiency as an axiological ideal, one which still informs organized education today. Contemporary ramifications include sharp distinctions between disciplines rather than interdisciplinary study, standardized curricula, conventional assessment measures and pedagogic mandates (especially for low-performing schools), age-grading and ability tracking, the reification/nominalization of conceptual material³, and hierarchical rather than cooperative participant structures. Largely, the focus remains on “product output” rather than on process development, a focus which is reinforced by inflexible routines and external-reward reinforcement. It is our view that one consequential impact of these institutional norms on education is the cultivation of “good students” rather than “good learners”, in other words, of obedient, conforming students rather than independent, critical, questioning or reflective students.

By the end of the twentieth century however, many educators and educational researchers were seeking alternatives to a positivist view of knowledge and behaviorist accounts of how people learn. Instead, recognizing students as agents in the development and construction of their own understanding, researchers began creating agendas characterized by an interest in understanding what resources learners bring to a situation and, correspondingly, how pedagogy could allow students a more active and assertive role in learning activities (Bransford, Brown & Cocking, 2000). Basically, this constructivist platform emphasizes that all knowledge is built from the prior beliefs, commitments, and attitudes that learners bring to a new situation and therefore that the direction and assessment of learning must account for and utilize the different resources individual learners draw upon to make sense of new information. The suggestion here is that, if students themselves are not given opportunities to engage what they already understand, they are not able to integrate new material, no matter how explicit the

²A similar critique is found in Freire’s (1981) portrayal of a “banking theory” of education, which shows how educators might treat students as non-responsive repositories of informational currency that can later be “withdrawn”.

³ As opposed to treating knowledge-building as an ongoing active, connective process – a kind of restructuring of remembered experience.

presented explanation. This remains the case, constructivists argue, even when such explanations include references to the “everyday” or “familiar” experiential world.

Subsequently, research-based critiques of the most radical constructivist views were soon to follow. A main concern was that a constructivist approach tends to overemphasize the individual and the internal development of presupposed, innate learning structures. (Karpov, 2003; Geist & Lompscher 2003) Further, in emphasizing the sudden insights (“aha moments”) facilitated by the kind of cognitive conflict typical of Piagetian interviews, constructivists seemed to overlook the significance of the situated learning environments facilitating those moments. Finally, radical constructivist perspectives have been critiqued for returning to a paradigm that invites the age-old Cartesian separation between internal mental life and an external material environment⁴.

Following Vygotsky, a third, dialectic view, broadly known as Cultural Historical Activity Theory (CHAT), has emerged, in part as an attempt to moderate between the philosophical extremes represented by material-empirical views and radical constructivist approaches to human development, and in part to help inform pedagogy. From this perspective “..human mental processes are neither developed in the course of children’s independent activity (as constructivists would hold), nor ‘unfold’ as a result of maturation (as nativists would hold) nor are inculcated into children by adults (as behaviorists would hold)” (Karpov, 2003 p. 139) . Basically, a dialectic view maintains that learning cannot be reduced to either acquisition of domain specific knowledge or construction of personal knowledge related to experience in the domain. Instead, learning is considered as a recursive yet expanding cycle of practical activity and theoretical reflection as the learner engages a more complex yet interconnected system of domain specific conceptions. Exemplars of a neo-Vygotskian approach to learning and pedagogy

⁴ Vygotsky stages a similar critique of the Wurzburg school in Thinking and Speech. He suggests that the Wurzburg school, like their western constructivist counterparts, saw their main task to overcome a learning paradigm governed by “associative” laws. Vygotsky (1987) suggests that the Wurzburg school “having liberated thought from any sensual component and returned it to a pure, unembodied, mental act, these psychologists simultaneously tore thinking from speech and assigned the latter to the domain of associative laws. Thus the connection between the word and its meaning continued to be viewed as a simple association... The word had no inner place in the life of thought.” (p. 68) Vygotsky (1987) found few opportunities in the constructivist approach for learners to move beyond what he describes as the formation of “spontaneous concepts”.

include Davydov's (1988, 1999) programs of domain/subject specific learning, described as "ascending from the abstract to the concrete", Engestrom's (1999) model of an expansive cycle of internalization and externalization, and Wells's (1999) explanation of "the spiral of knowing" where "knowledge grows out of and has value for action." Yet, a dialectical approach to learning does share several assumptions with constructivist approaches, including recognition of the need for learners themselves to be active agents (both practically and cognitively) in the learning activity. While advocates of a dialectic approach agree that learning activity must involve "what the learner already knows" they maintain that learners need new "objects" (goals) to act on. The emphasis on "goal formation" in a dialectic view is central, as Lompscher (1999) explains:

"Whereas the transmission strategy, as a rule, emphasizes goal orientation in the sense of presenting learning goals in a ready form, explaining them, if necessary and expecting or demanding an appropriate learning behavior, our orientation is directed to goal formation. We confront the learners with the phenomena, situations, and tasks going beyond their actual possibilities to such a degree that problem situations can arise" (p. 268).

The first "task" in a dialectic approach is for learners, using their own or readily available resources, to negotiate a definition of the problem-situation itself, thus transforming the object of study as it is appropriated. Further, learners need to become *aware* not only of the emerging object but also of how the course and results of their own (object-oriented) activity are situated by that object. We refer to this kind of strategic awareness or reflection as metacognition.

It is important to recognize that despite major developments in research-based theories of learning and pedagogy, the public institutional context that supports educational organizations still remains largely grounded in the ideology that was established by the needs of the burgeoning urban-centered industrial revolution. In a society driven by "the market" and focused on the promotion of capitalism, it is not surprising that "effectiveness" becomes confused with "efficiency". While ideals

promoting efficiency may be appropriate for organizations operating to maximize their profit margin, it does not follow that such ideals equally well serve organizations concerned with the development of human potential. Yet, because educational organizations function within the public sector, and thus are part of broad institutional systems, they are subject to the ideological norms that mediate decisions about the relative social “legitimacy” of all sorts of organizational forms and activities (especially those, as noted earlier, with highly complex, mutually contingent, and ambiguous core operating systems). In other words, the legitimacy and perceived productiveness of different learning activities and pedagogical approaches, may easily become confused by, or infused with, the axiom of efficiency.

Rationale for Course Design

Several considerations, including the preceding critique of the application of the ideal of efficiency to education as well as our own theoretical commitments to CHAT, prompted our development of an alternative design for the undergraduate course on theories of education. To begin, ample research has demonstrated the failure of transmission-style teaching in achieving learning outcomes as compared to more interactive forms of learning and teaching (Wegerif, Mercer & Dawes, 1999). Meanwhile employers as well as instructors are becoming increasingly dissatisfied with the inability of students to apply decontextualized concepts and skills learned in class to problem contexts beyond the classroom (Bransford, Brown & Cocking, 2001). Also, there is little space in an authoritative, didactic format, such as the large lecture, for students’ overall development of self-efficacy through a sense of agency/ownership in the learning activity. A further and more general concern is that school activities typical of transmission-style teaching seem increasingly disconnected from life outside educational institutions. This is amplified by the inability of a didactic pedagogy and other institutionalized classroom practices to respond flexibly to the diverse needs of an increasingly multi-cultural national population. Thus, for many students it is not apparent how the prescribed material relates to their own life trajectories, developing identities and personal concerns.

Furthermore, as already mentioned, we were concerned that many of the students who are successful in gaining entry into the university are precisely those who have assumed the role of the “good student,” that is to say those who have successfully navigated systemic requirements for entry into a major university -- those who have learned to play by the institutional “rules of the game” (North, 1990). However, more often than not, such success means that the student has learned not to question the perspectives, rationale or conclusions presented during instruction, but rather to align their own perspective with institutional expectations in order to perform efficiently on various benchmark assessment measures. While this stance may have proved successful in their gaining entrance to university, it does not prepare students for the conditions they will meet in the various professions they aspire to enter. And, in the case of those who are hoping to become teachers, it is not one that that we wish to see perpetuated in their work with the next generation of students. Thus, breaking the cycle was one of our prime concerns in developing a course structure more appropriate to the need for a critical and dialogic approach to learning and teaching in order to prepare students to meet the challenges that they and society at large face in the complex and rapidly changing world of the 21st century.

Finally, there was the subject matter of the course itself, an *Introduction to Theories of Education*, which was intended to include a critical comparison of the various theories underpinning contemporary educational practices. Based on our evaluation of these theories, as presented in the opening section of this paper, we wanted students to recognize the importance of collaborative engagement in “praxis” for learning; that is to say, we wanted them to understand that effective pedagogy requires opportunities for both practical activity and conscious reflection. With these as intended learning outcomes, it seemed clear to us that, if students were to appropriate such theories about how teaching may best support learning, they could reasonably expect to learn about them in a format that enacted the theories espoused.

Vygotsky’s describes “spontaneous” and “scientific” concepts as a spiraling integrated duality⁵. Vygotsky’s description of the development of higher mental functions

⁵ In his chapter on the development of scientific concepts, Vygotsky wrote: “to perceive something in a different way means to acquire new potentials for acting with respect to it:

emphasizes the mutual interdependence of *scientific concepts* (as complex systems) and *spontaneous concepts* in development. He stresses that the “empirical” worldliness and directness of the spontaneous concept preserves a richness that is critical for the appropriation of the conscious relationships established in the systems of scientific concepts. Meanwhile, he suggests that conceptual systems make possible the achievement of a deeper and more integrated understanding of the experienced world.

“Moreover without well-defined relationships to other concepts, the concept’s existence would be impossible. In contrast to what is taught by formal logic the essence of the concept or generalization lies not in the impoverishment but in the enrichment of the reality that it represents, in the enrichment of what is given in the immediate sensual perception and contemplation. However this enrichment of the immediate perception of reality by generalization can only occur if complex connections, dependencies and relationships are established between the objects that are represented in concepts and the rest of reality.” (1987, p. 224)

This thesis primes the importance of a combination of practical activity and opportunities to reflect on those actions - or “praxis” - for learning; thus our rationale was to devote some of the time allotted for the course to collaborative practical activities and some to extended opportunities to negotiate the meaning of those activities, which could then serve as the basis for further collaborative activity.

Course Design

In the light of the arguments developed above, we set out to design a course that would not only introduce students to the different theories of learning that have attempted to explain and shape classroom pedagogical practices but would also challenge students to explore and critique their own learning practices, their role in educational institutions, and their assumptions about how other people learn. For this latter reason we wanted to

“At the chess board, to see differently is to play differently. By generalizing the process of the activity itself, I acquire the potential for new relationships with it.” (1987, p. 190)

encourage students to engage more directly and critically with their community of peers by providing more intimate and active opportunities for them to connect, relate, debate and compare the diversity of their own previous learning experiences to their experience and understanding of the “big ideas” presented in this course. Finally we wanted to design a course that would foster a sense of ownership among the students, a design that would position them as both protagonists and authors of knowledge-building activities rather than simply conscripted information-processors with regard to the ideas of acknowledged experts in the field.

Our first problem, therefore, was to find a more interactive format within the constraints of the campus class schedule, which, for large introductory classes, consists of three 70 minute lectures per week with an additional meeting in smaller sections led by Teaching Assistants. This we did by retaining the timetabled structure of three meetings per week but with a different format: The class was organized in ten sections of approximately 30 students in each, with each section being further divided into six ‘study groups’ consisting of four to six students. Each week there was a 90 minute lecture for all the students and TAs on Monday then, during the remainder of the week, each study group met for one to one-and-a-half hours on their own; they then reported on their group work during the following 90 minute section meeting, at which they were encouraged to make connections between the group activities and the readings and lecture for the week.

Thus, the format of the course was organized to cycle through different stages of engagement: moving from the explicit explanation of key concepts in the lecture, to more agentic, experiential and dialogic explorations in the small group work, set within opportunities for further dialogue and synthesis with a relative expert (the TA) in the section meeting; it also involved students in inclusive “levels” of community, beginning with self.

Individually, students were expected to make regular entries in a journal, documenting and synthesizing how they were connecting weekly assignments (readings and group activities) with either their own experiences as learners, their own questions about learning, their reflections on learning events and group dynamics, or whatever else they themselves believed relevant. The journals were also intended to give students an alternative (legitimate) mode of discursive participation that relieved them from the

pressure of making "public" contributions in class discussions and the restraints on raw authenticity that often come with it. Journal writing was also presented as an opportunity for them to develop their own understanding by using writing to "dialogue with self" in what Vygotsky called "inner speech."

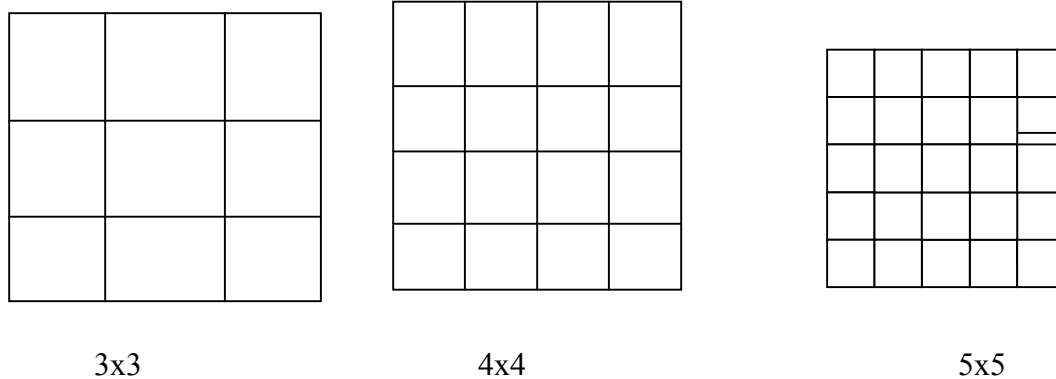
In the "study groups", students were required to complete a variety of tasks that highlighted different kinds of intellectual challenge which might subsequently be incorporated into their planning of curricular units in schools. Having completed the task for the week, the groups were encouraged to adopt a "metacognitive stance" to the relationship between the processes in which they had engaged and the course readings.

Accordingly, one of the first activities of the quarter, "magic squares" was paired with an introduction to the concept of metacognition in the reading for that week. The students were asked first to work individually on a 3x3 magic square and then to meet as a group to compare and discuss the strategies they were using to solve the initial problem and then to work together to solve more complex ones. This activity was intended to provide students with a common experience which they could then use collectively to investigate, reflect, and debate about their own problem solving strategies, as well as to realize the diversity of strategies employed by their peers to solve what technically appeared to be the "same" problem.

Thus, the magic squares activity was designed to provoke a metacognitive understanding of the contingencies constraining strategy choice, where different strategies are more and less applicable to a particular problem context. For instance, in the magic squares activity (see Figure 1. below), the task was to arrange the numbers 1-9 in a three by three grid so that every row, column and diagonal would add to the same sum. After having solved the 3x3 magic square, they were encouraged to try a 4x4 square using the numbers 1-16 and then a 5x5 square using the numbers 1-25. No further instructions were given. What is interesting is that many of the same strategies that work to solve the 3x3 square (e.g. deciding first what number should occupy the center) are also useful for solving the 5x5 but not for solving the 4x4 (there is no absolute center). This prompts students to consider more carefully how different strategies work differentially under various conditions. Although this consideration was realized in a specific domain, namely one involving math and logic, the section meeting discussions

aimed to generalize and adapt this metacognitive stance across disciplinary domains, and so to include a wider range of problem solving activities.

Figure 1.



Also, we considered it important for those students considering future careers in teaching to realize that their own students will not all approach a given task in the same way. As they develop their identities as teachers, these undergraduates need to recognize the importance of being open to a multitude of diverse strategies and explanations rather than remaining focused on that with which they themselves are already familiar or which is presented in a text.

Although subsequent weekly group-activities involved challenges of different kinds, the same general structure applied: some individual work, followed by exploratory discussion and peer-scaffolding in the study group, followed by a more comprehensive synthesis/analysis in the section meeting. A further important intention for these study-groups was that they would foster a more intimate peer-network, a “safe-space” in which, in the absence of authority figures, students would be more likely to engage in critical debate and less likely to assume a passive role. Building on these earlier activities, the final group activity was to design a grade-appropriate curriculum unit, using the principles encountered during the course.

The large lecture session, in contrast to the more student-centered orientation of other aspects of the course, provided an introduction to each new topic and an overview of the principles and ideas that it involved. Nevertheless, in keeping with CHAT theory,

each lecture also attempted to incorporate more interactive episodes (video-clips, demonstrations, etc., followed by a brief period of interaction with peers and more general discussion) again, acknowledging the need for active participation in collective sensemaking.

Within this organizational framework, section meetings were positioned as a pivotal yet central venue, providing an arena in which the different levels and aspects of the course could be mediated and integrated.

In every aspect of the course, the students were continually encouraged to question and debate the ideas they encountered, put them to use in a pro-active manner, and monitor the outcomes. In place of midterm and final exams, students were required to submit a substantial portfolio at the end of the quarter, in which they demonstrated their understanding and engagement with the theories presented. Students were informed on the first day of class that they would not be receiving formal grades for individual assignments but that the final grade would be based on these portfolios and on their participation week by week. This was done in an attempt to move away from the traditional paradigm, in which students' engagement with course material tends to be motivated by external incentives and leads to the memorizing of neatly packaged information that they can then repeat in response to exam questions that elicit a single, "correct" answer. Instead, our intention was for students to take ownership of, and responsibility for, their own learning and to devote their time and effort to developing lines of inquiry that they perceived as personally and socially relevant rather than detached from their lives and interests.

As we shall discuss below, while this organization did not fully realize our theoretical orientation, it did succeed in enabling the students to engage with the ideas of the course in a more active and personal manner than the lecture-only format permits.

Evaluation of the Course as Experienced

In order to evaluate the extent to which the students' experience of the course had matched our intentions in designing the course, we reviewed several measures of the student's participation and performance as well as their reactions to the course design. At

the end of the quarter we conducted and recorded two focus group interviews in which small groups of students were asked to comment on various aspects of the course. The five Teaching Assistants also participated in a focus group interview, reflecting on their perceptions of the affordances and tensions of the course. We also developed a tailored course questionnaire, which was administered on the last day of the course and completed by approximately 2/3 of the students. The responses to the survey questions were later coded and triangulated with other data sources, including the three focus group interviews, audio recordings of section meeting discussions, a substantial sample of student journal entries, and TA teaching diaries.

Taken together, these various sources of evidence suggest that, on all counts, the undergraduate participants experienced the course as distinctly different from other introductory level courses. The “novelty” for many students was that, for the first time in their careers as institutional learners, they were being explicitly asked to define the problem or purpose of the activities in which they engaged rather than simply using a prescribed means to provide routine or acceptable answers and solutions to pre-determined questions.

This opportunity to take on the role of protagonist motivated some students and frustrated others. Indeed, a major theme emerging from our analysis of student responses to this course design can be characterized in terms of a tension between, on the one hand, the security of purpose that comes with imposed, clearly defined parameters for achieving success and, on the other, the exciting challenge of having the opportunity to research and define both purpose and criteria on one’s own or in collaboration with peers. For some, this opportunity was transformative, and their number increased as the course proceeded. These students truly embraced the chance to engage more directly with their peers; they also valued the opportunities to express themselves more freely, to think metacognitively by placing “text” in “context”, to take ownership, and to apply what they were learning to a constructive collaborative project such as designing a curriculum unit. In sum, they engaged in a deeper and more interconnected kind of sense-making.

One student summed up her experience of the course in this way:

I believe in teaching to change the world, and I don't mean in the 'I impacted a child today, there's no knowing how far that will take him,' way. I mean in the way that I want to teach children to think critically and pull apart the decisions and rules and standards set out by authority figures and institutions.... We just finished our presentations for the course. I admit that our sections seemed long at first but towards the end of the class, I really got into them, and began using that time for asking questions I really wanted answered. I find that I wake up everyday with more questions to ask the group. I do this because I have come to know and respect my classmates as future educators.

On the other hand, in the absence of pre-determined ends (much less pre-determined means), some students found it difficult to establish connections or synthesize different aspects of the course independently of an expert and, as a result, they became frustrated by the ambiguity and uncertainty. Lacking their own clear purpose for their work, and getting lost in details, some of these students tended to lose interest and gave up trying to make their own sense of their experience of the course. One student comments on her struggle midway through the course in a journal entry:

“I have found myself struggling to create my own structure in this class, but despite what I create as a structure... there are still expectations.... Usually the expectations of the teacher create the goals of the student, especially in this university setting. And this is where I am faltering... I don't know the expectations of the teacher (except that I have to turn in a portfolio at the end) and so my goals concerning the class aren't forming well.. ”

This tension was felt in different ways in different aspects of the course. For instance, many students reported that they deeply appreciated the weekly journal requirement, noting that, lacking prescriptive expectations, this medium was crucial in that it allowed them to regularly explore, develop, and monitor changes in their understanding of various theoretical perspectives. Yet, on the other hand, they often felt that the effort they put into the journal entries was not sufficiently recognized or

incorporated into the core of the course and so it was unclear whether the ideas they were writing about were valid or not. This was largely because of the sheer inability of the five TAs to read and respond to over three hundred journal entries per week and then devise interesting ways, in weekly section meetings, to incorporate students' individual perspectives into a productive public discussion of the key ideas and principles of the course.

The weekly activities carried out in the study-groups produced the most extreme and the most voluminous student response, both in focus group interviews and in the survey questionnaire. Consistently, students reported that the support network they developed in these peer groups was crucial to their intellectual progress in the course. Furthermore, students reflected positively on the dialogue that took place in this forum. For instance, one student wrote about the group learning that took place during the "magic square" activity:

“...The driving question though is how does *the internal pattern recognition gained through behaviorist learning* compare with *the views perceived through joint group activity*? For this specific question [i.e. task] I think there is a definite answer. I feel the knowledge gained through joint group activity outweighs the learning taking place through the behaviorist paradigm. I feel this way for several reasons. I feel that the pattern recognition skills are simple at most. There may be several complex equations leading to answers but overall it is finding the numbers that can solve the equation. There is no room for debating and the mind never opens up to heated thought. As with all aspects of life, diversity is key. When a problem has a definite answer, once it is found, the learning essentially stops. I feel therefore the acts in which we all shared and took in the strategies and thought processes of our group members was more beneficial. Listening to what they are doing may make your mind in turn start looking at new strategies which would not have been considered on an individual basis.”

However, other students were unable to adopt a metacognitive stance in order to

relate the weekly activities to the broader themes of the course. Given freedom to choose their own approach to the activities, they had difficulty in finding and/or constructing their own purpose for the activity beyond completing the task itself. One student wrote:

“There is little discussion about why we are engaging in the activities we are. Things seem very loosely connected at times in this class and the ‘Rescue at Boones Meadow’ was a good example of this. I believe that the aim of this activity was to get us thinking about ways to teach problem solving and math to younger children. However my group spent a large amount of time together attempting to make scientific conversions that I had long forgotten. I don’t enjoy the way that we are expected to jump from one random subject matter to the next, expected to make our own connections. While I enjoyed what we did in section more than I would have talking about the Boones Meadow activity (it was really cool to talk about the reading in depth – More!) I felt disconnected from the lecture to the group activity to the section.”

It is likely that some students found it difficult to forge connections between the activities and the larger aims of the course because in prior educational settings, they had been routinely charged with completing a task in accordance with clearly defined, non-negotiable expectations. Recognizing this, one student included the following in boldface type in her journal:

Our current educational system takes the structured aspect ... to such an extreme that this approach ends up arresting the student’s ability to function in and take advantage of the other approach. People seem to have such a hard time accepting Education 92B’s philosophy and expectations and this is only because their previous school learning developed certain modes of operation, habits, approaches to problem solving, ways of thinking that stand in stark contrast to the 92B approach. Their acquired skills lose their meaning and capacity for use in this new setting. Undoubtedly it must prove perturbing for students to find

themselves in a context where they are unable to use the habits and skills they have refined through their years in school.

It is worth noting that it was the inclusion of the small study groups that the majority of the students found to be the most beneficial feature of the course format. And, while some groups had difficulty in constructing their own purposes for the earlier activities, the final group activity, that of creating a curriculum unit based on the California Curriculum Standards appropriate for their chosen grade level, was universally successful in engaging students in thoughtful and productive collaborative work. Volunteers for the focus group interviews following the course communicated their own positive feelings about the usefulness and authenticity of constructing a curriculum unit especially clearly:

“My favorite part of the class was the curriculum assignment. It was very helpful for me in understanding the concepts of the class. I feel that it was a form of praxis, the conjunction of theory and practice. [The curriculum assignment] was the first time I have been given a chance to do a project like this in a class...”

Moreover, from a pedagogic perspective, the intellectual and academic benefits of the project were apparent when students presented their curriculum plans to their sections and, in many cases, in the rationales they wrote individually for the choices they made in constructing them.

Some students appreciated the lecture as a place to encounter and review the major theoretical ideas of the course while others found it to be redundant when taken with the assigned readings. On the whole, students felt that the lecture-format did not fit with the theories of education they were learning about and even seemed contradictory. This was difficult to reconcile with the fact that, at other junctures, students feeling lost complained that they needed more explicit, direct instruction. Lectures were also the one venue that students had access to an expert. Clearly, questions remain about how to

make the best use of this part of the course time.

Grading (or rather its absence) was also a contentious issue. Students expressed concern and feelings of vulnerability regarding their final grade when they did not have access to concrete indicators of their ongoing standing in the class, knowing the importance of course grades for later access to graduate programs and other career opportunities. As one wrote, “During our last class meeting the subject of grading arose and this led to a very intense group discussion on this topic because it is a topic that most students care very much about. Students who are very concerned about their grades worry because GPAs are important if they want to attend graduate school. Because their grade is so important to them, these students want to know that their grade is also important to their TA and the professor... I can only hope that my sincere hard work and the quality of my contributions will earn me the grade I so care about.”

At the same time most recognized grades as inadequate indicators of their learning:

I think that ... questions about Assessment and Communication are important... Some students better understand how to take tests and give teachers what they want. But I don't think that necessarily implies they know or understand more than other students that answer the questions “seemingly” less correctly.... But having taken many tests I do know that there will be a wide range of answers. I've seen brilliant students not give a damn about grades and it would be reflected by their grades, but I always knew they knew way more than me while I was the one getting better grades. I think [formal] assessment ...is the wrong motivating tool. It doesn't help teachers make the proper adjustments, it doesn't give the students the right confidence in their abilities. I can't even recall how many points I've been screwed out of by a teacher when I knew the subject backwards and forward. And I blame the teacher for playing the point game... It relates to the same questions I posed last week about the goals of the system and how it fits into our current social structure and practices. For those reasons it's a system that works quite well, but in terms of benefiting students and their own self worth it is a very

defeating tool. I hope to bring this understanding into the classroom.

In the context of these various sources of ambiguity and uncertainty, the section meetings were critical to the success of this way of organizing the course. As anticipated, the students saw section meetings as THE place to integrate their personal understanding of the course readings with the outcomes of weekly activities, group discussions, and the information presented in lecture. The majority found these weekly meetings extremely helpful and they were full of praise for the TAs' skill and supportive adaptability in meeting their diverse needs. However, the heavy demands that organizing these meetings placed on the TAs meant they were not always able to organize meetings that attended to all the issues that students raised. As a result, issues that were not explicitly discussed in section appeared to be treated as peripheral, leading to some of the less agentive students feeling even more confused.

Discussion

A CHAT perspective suggests that “[p]eople and organizations are all the time learning something that is not stable, not even defined or understood ahead of time. In important transformations of our personal lives and organizational practices, we must learn new forms of activity which are not yet there. They are literally learned as they are being created” (Engestrom, 2001, p. 6). However, the current format of most large university courses in the U.S. leaves little space for such considerations. Thus our attempt was to design a course that made space for interactive networks of learners to negotiate and attempt to achieve meaningful goals through dialogue and activity. The data we collected suggests that with few exceptions, undergraduates experienced this course as distinct and noticeably different from other courses in this respect. Further, beyond being something novel, our analysis shows that for most of the students participating in the course, it was a largely successful learning experience.

Several theoretical frameworks across the social sciences are moving away from characterizations of learning as occurring through rational, “goal directed” activity undertaken by independent individuals towards models that recognize the importance for

learning of the negotiated nature of the goals and outcomes that emerge in the course of engagement in collective endeavors. Open systems theories (such as CHAT) look beyond individual action/achievement to an analysis of networked activity, while recognizing the inherently “open” rather than “closed” status of semiotic systems. Thus our analysis attempted to understand student responses as dynamic and interconnected contingencies of a larger semiotic system.

Given the norms shaping the larger institutional setting of university lecture courses, one way of describing the students’ experiences in 92B is as a kind of systemic *contradiction* or *interruption* (Engeström, 1999; Weick, 1995). Working within the framework of organizational theory, Weick describes interruptions or breaks in the “ongoing flow of events” as moments in organized activity that “capture sustained attention” or “occasions for sensemaking” (1995, p. 86) Similarly, several voices in the CHAT community have discussed contradictions as opportunities for the kind of change and transformation that involves learning where “sensemaking” is said to involve a shift from automatic to volitional, active thinking (Engeström, 1999).

Weick is careful to distinguish between different varieties of occasions that are perceived as problematic. In particular, he distinguishes *ambiguity* from *uncertainty*, asserting that while both invoke a shift to more active thinking, in the case of ambiguity, “people engage in sensemaking because they are confused by too many interpretations, whereas in the case of uncertainty they do so because they are ignorant of any interpretations” (1995 p. 91). The importance of distinguishing ambiguous occasions from uncertain ones is that they require different means for resolution. To resolve uncertainty (ignorance created by insufficient information) people need more information. On the other hand, to resolve ambiguity (confusion created by multiple meanings) a different kind of information is required, namely the integration of multiple cues through rich collaborative communication – negotiations that “enable debate, clarification and enactment more than simply provide large amounts of data” (1991, p99).

Further, Weick argues that people may respond to any occasion for sensemaking in different ways and he describes two strategies as particularly salient: sensemaking as *expecting* vs. sensemaking as *arguing*. On the one hand, agents may search for and rely on old routines, habits, and expectations even when these increasingly mislead or narrow

their perspective. The suggestion here is that people are more interested in confirming than disconfirming existing beliefs. This initiates a cycle of activity that might be characterized as a “self-fulfilling prophecy”. Seeking to confirm what they already assume or expect, people attend only to those cues in a situation that seem to confirm or correspond easily to previously established beliefs (or schemes) and heuristics, and then act accordingly. Through these belief-driven actions, the enacted situation is brought closer to the beliefs and expectations shaping the agents’ actions, thus providing further confirmation. Weick argues that unless there is a major disjuncture, compelling people to confront “noncontingent reinforcement of their responses” (p. 84), they will make use of the earliest available information that indicates some feasible way of acting. Feasibility, is determined in consideration of the way the future seems to be unfolding. This mode has been noted by several authors, including Bruner (1986) who describes how expectations work at the level of perception:

“..it is characteristic of complex perceptual processes that they tend where possible to assimilate whatever is seen or heard to what is expected.... What human perceivers do is to take whatever scraps they can extract from the stimulus input, and if these conform to expectancy, to read the rest from the model in the head.” (p. 46-47)

Argyris (1976) reiterates the point succinctly:

“Every theory-in-use is a self fulfilling prophecy to some extent. We construct the reality of our behavioral worlds through the same process by which we construct our theories-in-use. Theory building is reality building, not only because our theories-in-use help to determine what we perceive of the behavioral world, but also but also because our theories in use determine our actions, which in turn help to determine the characteristics of the behavioral world, which in turn, feed our theories-in-use.” (*in* Weick, 1995 p. 123)

The alternative, sensemaking as arguing, is initiated when people become aware of more and more varied cues, conceive of multiple meanings and seek to find some way to integrate or organize them. Depictions of sensemaking as collaborative joint activity which emphasizes dialogue and argumentation have been repeatedly described by a variety of authors working across several disciplines in the social sciences (*e.g.* Hagvet, 2003; Matusov, 1996; Mercer, 2004; Warren, 2005; Wells, 1987, 1999). Most discussions can be related to what Wells (1999) for example, describes as the “negotiation of meaning”: a process where multiple participants, collaborating in dialogue, advance, entertain, rescind, revise etc. a range of perspectives on a topic in an ongoing attempt to establish intersubjective agreement. Weick describes this kind of cooperative debate as “individual reasoning ..embedded in social controversy”(p.137) and points out that this form of sensemaking requires more sustained attention, conscious-volitional engagement, and active decision making than sensemaking as expecting. Basically, sensemaking as arguing is more effortful than sensemaking as expecting, so people only engage in it when they think there is good reason to do so. He also predicts that a certain amount of “stability” is required for argumentation to be perceived as potentially fruitful:

“Arguing in a world where no one is certain what is happening or what will happen next is fruitless, although it may be soothing. In an unstable world, what people need is some sort of stability... The combination of selective noticing, selective shaping, and serial self-fulfilling prophecies eventually constructs a social world where people may then be able to worry about the accuracy rather than stability. Once stability is achieved then accuracy is possible.” (p. 153)

Conclusion

For most of the students, the experience of 92B fits Weick’s description of ambiguity. Rather than providing clearly defined and authoritative guidelines that establish concrete

or routine means-ends repertoires, the goals and means of the problems presented in 92B were treated as themselves negotiable. The course was designed to promote an “occasion for sensemaking” through distributed rather than hierarchical responsibility in fluid decision-making, explicit investigation of contradictions and paradoxes, the engagement of multiple and conflicting goals and dialectic negotiation of multiple interpretations of information. However, as a result, students were often uncertain about what strategies might be relevant and what success in resolving a situation would mean.

Predominantly, as Weick’s framework suggests, the students engaged with this state of ambiguity in one of two ways: by relying on previously established (institutionalized) expectations about success in learning or by exploring and engaging with multiple meanings through argumentation. In the absence of other “objective” criteria, some students tended to rely more on previously established value orientations and ideology to make sense of the situation. In particular, these were expectations conditioned by the students’ own historical careers in educational organizations, which themselves are shaped by the ideology of the surrounding institutional environment. For them, the expectation was that instructors have established notions not only about correct vs. incorrect responses, but how they are formed and performed. It follows, then, that it is to the student’s advantage to deduce the instructor’s position, as quickly and efficiently as possible, so as to align their own actions and perspectives accordingly (self-fulfilling prophecy). Alternatively, those students who were able to move beyond previously established expectations about their role and what counts as legitimate evidence of successful learning, were able to find relevance and integrate multiple meanings by adopting a dialogic and metacognitive stance towards their own learning and thus come to a more complex understanding of how people learn more generally. This they did primarily with others in their study groups and with themselves through writing in their journals. Finally it must be acknowledged that each “variety” of sensemaking involves the other to some degree. Every attempt at negotiation intermittently involves the strategic assumption of retrospective consensus, otherwise a continuing conversation would be impossible. Meanwhile, every assumption or expectation involves some degree of negotiation because no two situations are ever identical.

Questions remain about why some students were likely to rely on previously established expectations while others were motivated to confront multiple cues and construct new meanings. We need to understand whether these differences are systematic and whether they are tied to similar cultural-historical trajectories on the part of the students that engaged in these different approaches to learning. Answers to these questions would help us to modify the format and expectations of the course to engage all students more fully and effectively.

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