The Challenge of Constructivist Teaching
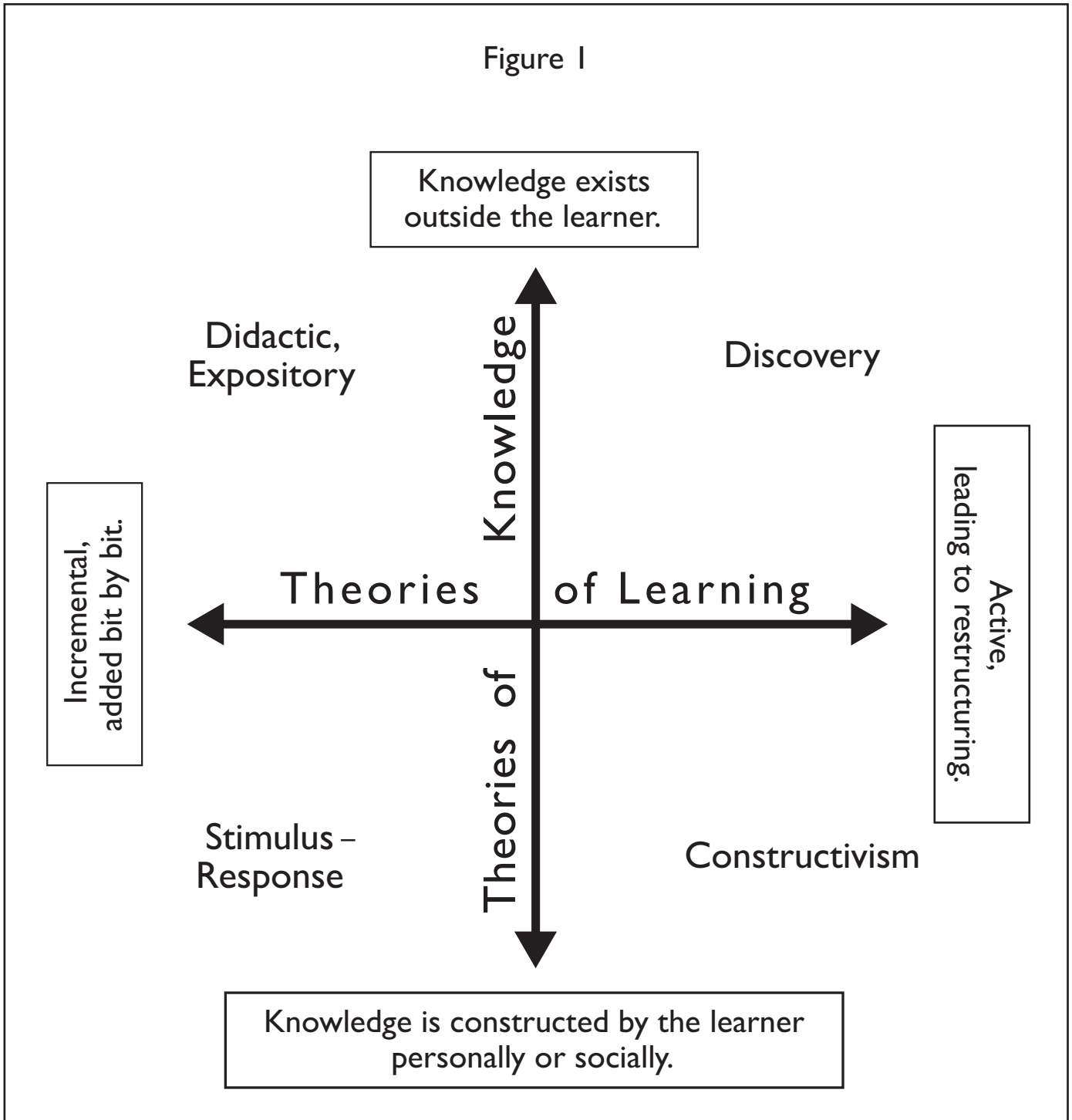
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INTRODUCTION

Constructivism, the current name for an old idea that human beings construct knowledge (Hawkins, 1994), is an appealing theory when used to describe how people learn, how they make meaning of the world. It is significantly more challenging when viewed from the perspective of the teacher. *Constructivist learning* may be little more than a tautology, but *constructivist teaching* involves serious questions about pedagogy. If meaning-making is personal and idiosyncratic, what is the role of the teacher? What strategies are appropriate for teaching in a constructivist world?

At one level, constructivism challenges a teacher's authority and place in the classroom. Many writers have addressed this political issue. (see Apple, 1979). If the intention of education is for students to construct their own meanings, then the traditional role of the instructor as sole dispenser of knowledge is necessarily diminished. As a result, a more democratic educational experience can be forged for students. But this question of power relationships in education represents only one aspect of the challenges faced by the constructivist instructor, for, if meaning-making is personal, what is the pedagogic role for the teacher? It is one thing to give up power, it is another, and, I believe, more difficult task to develop a defensible pedagogic strategy that allows a crucial role for the teacher and still provides room to accept and even encourage personal meaning-making (see Fasnot, 1996.)

The next section provides a brief overview of the essential components of any constructivist educational theory to illustrate the nature of this challenge.

CONSTRUCTIVISM

Figure 1

Knowledge exists
outside the learner.

Didactic,
Expository

Discovery

Knowledge

Incremental,
added bit by bit.

Theories   of Learning

Active,
leading to restructuring.

Theories of

Stimulus –
Response

Constructivism

Knowledge is constructed by the learner
personally or socially.

from George E. Hein, "The Challenge of Constructivist Teaching"

The central premise of constructivism is that human beings create the world they know and understand from the interaction of the sensations that impinge on them and their responsive acts of cognition. The world of meaning is not revealed through the senses and reason, but generated by us. Essential to constructivist theories is both a particular view of learning theory and one of epistemology. It addresses both *how* people learn, and *what* they learn. If we consider possible theories about learning and theories of knowledge (epistemologies) and view each as falling somewhere on separate, orthogonal continua, then constructivist educational theories fall into one quadrant of the possible combinations of these two domains. This model is illustrated in Figure 1 (Hein, 1994, 1998).

The constructivist view can be contrasted with its diagonal opposite quadrant, the most traditional view of education, which I have labeled "Didactic, Expository" education. Didactic, Expository education is based on the theories that argue both that people learn passively (that learning consists of the incremental accumulation of knowledge) and that this knowledge reflects the actual state of the world outside our minds (a "realist" epistemology).

ACTIVE LEARNING

An increasing body of evidence, most of it accumulated in the 20 century, supports the view that human beings construct knowledge, that their minds are actively engaged in any learning activity.

It is worthwhile reviewing some of the evidence that supports the notion of mind actively engaged in constructing knowledge.   The evidence comes from three different domains. First, developmental psychology, one of the triumphs of 20th century social science, has convincingly demonstrated that children are not born with the ability to interpret the world as their elders do. They have to learn the meaning of things and they do so gradually, as they gain experience. Piaget's clinical interviews of young children (Piaget, 1929) are full of these incomplete interpretations of nature or language, based on children's meaning making. Teachers of young children constantly report their students' idiosyncratic interpretations of the world, based on their (limited) knowledge and experience. Careful descriptions of classroom practice abound with students' delightful conclusions, based on the evidence available to them, that differ from canonical views (for example, see Rosebery & Warren, 1998). Most "cute" stories about our children's and grandchildren's intellectual development stem from their efforts to make sense of the world based on their personal experience.

Further evidence for the universality of meaning-making comes from the experience of those deprived of the full range of sensory connections with the world. Oliver Sacks has written about people with various neurological or sensory deficiencies. One striking group whose experiences

he describes are the few individuals who, blind all or almost all of their lives, suddenly regain sight. These patients face profound, long-lasting sensory, intellectual, and emotional challenges in their attempts to make meaning of the overwhelming visual world they encounter. Sacks says,

> The rest of us, born sighted, can scarcely imagine such confusion. For we, born with a full complement of senses, and correlating these, one with the other, create a sight world from the start, a world of visual objects and concepts and meanings. When we open our eyes each morning, it is upon a world we have spent a lifetime learning to see. We are not given this world: we make our world through incessant experience, categorization, memory, reconnection.   (Sacks, 1995, 114)

Finally, significant research by cognitive psychologists during the past few decades on how people learn, how they come to understand their jobs or professional work, how they learn to play chess or pursue other hobbies, and, in general, how the mind functions, informs us that all humans construct knowledge. Summarizing this work in a recent National Research Council publication, the authors state,

> Humans are viewed as goal-directed agents who actively seek information. They come to formal education with a range of prior knowledge, skills, beliefs, and concepts that significantly influence what they notice about the environment and how they organize and interpret it. This, in turn, affects their abilities to remember, reason, solve problems, and acquire new knowledge. . . .In the most general sense, the contemporary view of learning is that people construct new knowledge and understandings based on what they already know and believe.
> (Bransford, Brown, & Cocking, p. 10)

The arguments above lead to immense controversy in education. Fierce battles has raged throughout this century between progressive educators and conservatives, between those who argue for the importance of experience and activity and those who focus education on drill and practice, on "back to basics" where subjects are learned in a specific order with an emphasis on systematic development of skills and memorization of facts.

Regardless of the outcome of this political dispute, the pedagogic consequences of the "active mind" approach to education are clear: in order to learn, learners must be given the opportunity to engage with material, to have experiences, to manipulate both nature and ideas, to experiment, argue, inquire, and see the results of their own activities. Progressive educators at every level have generated curricula and classroom situations that allow these activities to take place. Science courses include laboratory exercises and fieldwork, history students collect oral histories from family members, social science students practice interviewing and observing, and arts students draw, play, and perform.

CONSTRUCTED KNOWLEDGE

But constructivism, the lower right hand quadrant in Figure 1, includes an additional, crucial concept. It differs not only from the traditional, didactic expository educational approach, but also from another popular view of education, which I have labeled "discovery." Discovery Education

Figure 2
Meaning-Making and Educational Theory

Status of Meaning-Making	*Attitudes Towards Meaning-Making*	*Educational Theory*
Meaning making is an inevitable consequence of human interaction with nature and culture.	Ignore or Suppress	Traditional, Content-Centered
	Tolerate or Accept	Discovery, Active Learning, Learner-Centered
	Encourage or Embrace	Constructivism

from George E. Hein, "The Challenge of Constructivist Teaching"

accepts that people learn actively, but posits that the knowledge thus constructed can still be "right" or "wrong;" that it more or less reflects the way the world actually *is* and that, through actively seeking knowledge, we discover it.

Supporters of constructivism argue not only that personal meaning-making is inevitable, but also that it is the goal of education and therefore needs to be encouraged and accepted. They suggest that understanding comes from the active creation (construction) by the learner of the knowledge itself (von Glasersfeld, 1990). Not only do students have to be given the opportunity to experience: to measure, observe, interview, draw and perform. their products also need to be honored and validated on criteria other than their fidelity to an accepted canon. (For implications of these differing criteria for teaching science, see Duckworth et al., 1990).

The difference in the way these theories view personal meaning-making is illustrated in Figure 2.

A PERSONAL JOURNEY

My own professional education was primarily within the traditional domain of didactic, expository teaching. I studied chemistry and the model of our education (although there were striking exceptions in practice, as I realized much later) was the professor who could give a lecture where all the material was neatly laid out on the blackboard in a logical progression. When I arrived in Boston in the early 1960's, one of the rituals of the organic chemistry community was to attend the public lectures by Nobel Prize-winning synthetic chemist, R. B. Woodward. About once a year, he would entertain and enlighten colleagues and students by presenting a dazzling lecture, illustrating his latest achievement (supported by dozens of graduate students and postdoctoral fellows) in the synthesis of one more biologically important compound. The lectures always followed this neat, logical pattern, demonstrating his skill and knowledge. After the lecture, some of his doctoral and postdoctoral students might suggest to us that the actual practice in the laboratory wasn't so neat; there had been other pathways that failed, and some serendipitous moments captured and exploited. Although we all knew about the realities of laboratory work and the tortuous effort involved in synthetic chemistry, we nevertheless accepted Woodward's "stories" as the model of how to unlock nature's secrets.

Besides the hints from the real world of research, experiences from my own teaching also contradicted the idealized, logical picture of education. First as a graduate teaching fellow and then later, especially as a teacher of a basic chemistry course for non-majors (a course decreed to be inadequate preparation for any future courses in the department), I became aware of the apparently "stupid" things my bright students tended to do. I also noted that well-meaning,

dedicated students frequently didn't understand what I taught, no matter how detailed, sensible, and logical my expositions might have been. It was years before I came to understand that when I asked them questions or probed their knowledge they simply had different models in their heads from whatever it was that I expected them to know.

Subsequent experiences as a member of a curriculum development group heavily influenced by Piaget and the British Integrated Day approach (Plowden, 1967; Weber, 1971), and work with adult students returning for advanced degrees, as well as considerable reading, gave me some appreciation of both the power and the value of personal meaning making in education.

My vague ideas about self-directed learning were confirmed when I came to Lesley College (which recently became Lesley University) and had the opportunity to work as a faculty member and later as director of the Masters' Degree Independent Study Program. This brilliant program, conceived by the first Dean of the Graduate School, William Perry, and developed by its first director, Cynthia Cole, was based on a deceptively simple model: students were only required 1) to describe what they wanted to learn, 2) devise a learning plan—how they would go about this through courses, apprenticeships, reflection, and papers, 3) to produce a final major project or thesis, and carry all this out with (infrequent) guidance of a small faculty team.   In its 25 years, the program has remained essentially unchanged.

The opportunity to pursue their own interests, to have faculty take seriously their choice of topics, and the requirement that they demonstrate their learning, whatever it might be, were sufficient for students to produce amazingly professional work in a wide range of fields within the boundaries of Lesley's subject areas in the human service field. The successful careers of over 500 alumni attest to the viability and appeal of this constructivist approach to pedagogy.

A more specific challenge came with development of a CAGS program in 1977 and, later, the Ph. D. Program, which admitted its first class in 1987. Both programs required that all students take some courses together, regardless of their personal interests. As cross-college programs, these seminars enrolled a range of students committed to developing professional competence in human service fields, especially education and some forms of therapy, specifically, counseling psychology and the use of the arts in therapy (expressive therapies).

INTERDISCIPLINARY SEMINAR:
THE INTERFACE OF TEACHING AND THERAPY

Plans for advanced programs at Lesley College, both CAGS and Ph. D. included our intentions to provide some common experience for students that would allow them both to develop professional skills and form a community among each cohort.   As director of the program, my challenge was to develop a course that embodied the constructivist theory I had come to accept, that would be interesting and provocative for all students, and that would challenge them and provide them with skills and outcomes appropriate for their range of interests. The interdisciplinary seminar descried below allowed me to accomplish these goals.

In developing the course, I tried to adhere to the following criteria, which I felt were necessary to create a constructivist educational environment.

STRUCTURE

From our work in the Independent Study program, I had come to realize that a requirement for any educational activity that provides opportunities for students to pursue their own interests is intellectual flexibility be paired with clear, consistent, and strict administrative structure. The cliché that progressive education failed because it did not impose "rules" on students may be historically inaccurate in relation to the models proposed by Dewey and others, but it does reflect a common confusion. Guidelines for pedagogy need to be considered separately from guidelines for the administrative structure of education. Student autonomy and ability to pursue personal interests in depth are facilitated, not hindered, within the confines of clear expectations. Assignments, papers, and other responsibilities for the students need to be spelled out in detail and reinforced. The challenge of finding your own subject matter and grappling with its complexities is sufficiently difficult for all of us. Adding the burden of trying to figure out what is required administratively in a course leads to chaos.

Thus, the interdisciplinary seminar has detailed expectations for students: a specified amount of reading; a requirement that each student take responsibility for preparing a class session (and supplying reading to the rest of the class in advance); required papers, including comparative book reviews; and a final term-paper.

The detailed requirements were all administrative not substantive. Thus, students had to review professional literature, but they determined what they read and wrote about; students had to prepare a presentation, but the topic was their own professional work, as they chose to define it.

TOPIC

The next challenge was to find some unifying theme that would allow students to pursue their own interest, but that would be relevant to all the class members. It occurred to me (in a classic "Eureka!" moment, as I was shaving one morning) that all the students were engaged in some form of either teaching or therapy (or both). Examining the interface between these two domains would be relevant to all of them. No matter where on the spectrum of Lesley University human service programs students were engaged—and some of the independent study students, especially, were exploring at the fringes of what might be described as either education or therapy—they were grappling with issues that covered these areas.

In truth, the "unifying theme" was devised to provide students with a point of reference within which they could explore their own professional lives, not as an absolute requirement. On the whole, students accepted my topic with good humor. But, all bent it to reflect their own interest, while a few argued that this topic was not interesting or relevant for them. My usual counter was to suggest that, at a minimum, they could address why the topic was not appropriate to their profession.   I remember one student who argued that her doctoral subject was museum education, which had nothing to do with therapy and, besides, there was no literature on the therapeutic value of museum education. It took her some weeks to discover, partly from other class presentations and partly from library research, not only that such a literature existed, but also that it had some meaning to her own ideas about the educational potential for museum visits.

SEEDING IDEAS

A final requirement for an effective class, in my view, is to "seed" the course with suggested content. Allowing students to pursue their own interests is a powerful educational strategy, but all of us need time and stimulation to connect our every day lives with an academic experience. Students need guidance in getting started on constructing their own knowledge and they need to be provided with sources, ideas, and models. The course provided three different kinds of input to help them get started.

First, I gave the students an extensive reading list of material that, in my view, covered some aspect of the teaching therapy interface. This list included:
1. Therapists' literature relating therapy and education, including classical articles by Anna Freud, Eckstein & Motto, Bruno Bettelheim etc.

2. Educational literature discussing various aspects of the noncognitive components of education, such as alternative schools like Summerhill (a school for troubled adolescents [Ginandes, 1973] had once actually been housed in the same building that contained the Interdisciplinary Seminar classroom in the early years of the Ph. D. Program),

3. Work by Maslow, Rogers and other humanistic psychologists who discussed its educational significance.

4. Political issues associated with education and its social (and psychological) impact on a wide range of children, as illustrated in writings by authors such as Delpit, Henderson, Native American educators, and others.

5. Adult development and education, especially women's development, as discussed by Belenky, et al., Daloz, Gilligan, Miller, and others.

Since one course requirement was that students suggest additions to the list, the bibliography grew over the years. Thus, therapeutic uses of theater, deaf education, and child development (to name just three examples) were eventually represented on the list because students had provided fascinating articles that illuminated the teaching/therapy interface in these fields.

Second, I gave an introductory lecture (in a traditional style) in which I outlined some of the historical development of major ideas about both modern educational theory and therapy, with constant references to the various readings on the list. The intention of the lecture was both to make a connection with the theme and to introduce enough ideas from the various readings so that students would be tempted to engage with something illustrated in the readings supplied. I based it on an idea suggested to me decades ago; to search the index of any required book that didn't seem too appealing, since it was likely that at least one entry would tempt the reader.

Finally, at an early class, I modeled the presentations I wanted them to make by talking about my own professional development and providing some of my own evolving history as an educator. The readings for my presentations were papers I had written on educational topics. I stressed that I considered myself far to one end of the teaching/therapy interface, engaging in teaching and not in therapy, although I usually had to admit, in response to class discussion, that my own style might still be "therapeutic."

CLASS ORGANIZATION

The early sessions allowed the class to get started and for students to become acclimatized to the freedom of choosing their own topic, as well as providing them with prompts and (I hoped) tempting subject matter. By the fourth class, we would embark on the main content of the course, the individual student presentations of their own professional work, buttressed by readings they

assigned. These presentations and readings varied widely. Almost everyone took their own presentation seriously and prepared at length. But not everyone was a gifted presenter, and, therefore, classes varied.

INSTRUCTION AT THE TEACHING/THERAPY INTERFACE

It's possible that other topics could have served the seminar as well, but the unifying theme also allowed the topic to be reflected in the class dynamics. At times, and more some semesters than others, the class itself served as a combined educational and therapeutic experience for all its members, including the instructor. Powerful bonding occurred among class members, personal experiences were shared, and students felt validated and revitalized. It was possible to use the class dynamics as a subject for discussion of what constituted the boundary between the two fields, and where they might overlap.

CONSEQUENCES OF CONSTRUCTIVIST TEACHING

THE INSTRUCTOR'S ROLE

The greatest challenge for me was to accept the consequences of turning the subject matter and especially much of the responsibility for class presentations, over to the students. Each week, I diligently read the material assigned by students and came prepared to help with the discussion, but the presenter controlled the dynamic and atmosphere of the class to a large extent. I found relinquishing control very difficult, especially when the class didn't turn out to be great.

I worried about whether I could afford to continue in a relatively passive role (not a natural one for me), as I also realized that I couldn't have it both ways. If the students were to experience a constructivist class, where their meanings were valued, they had to have the opportunity to take charge, and, inevitably, the opportunity to do poorly. While most class sessions were stimulating and rich, the few times that the class dragged were painful for me and made me question the process I had instituted.

INSTRUCTOR'S KNOWLEDGE

Another concern for me was that, frequently, students discussed topics about which I had only peripheral knowledge, if any at all. Fortunately, a life time of academic teaching does lead to familiarity with a range of subjects, but a vague knowledge of, say, current controversies in reading instruction hardly make an instructor qualified to lead a discussion generated by a reading specialist's description of the last 20 years of her professional responsibilities. Each

week, I had to decide how much I needed to do additional background reading on the topic to be discussed. Eventually, I learned that the amount I knew about a subject was less important than my ability to distinguish between a well formulated presentation that made sense to me with my general knowledge of the practice of education, and one which raised questions about its validity in relation to what I already knew. There were times, especially if the presentation was by a therapist, where I simply had to accept acknowledge my limited background. Admitting my own ignorance in a field seemed to disturb the class much less than it bothered me.

STUDENT ANXIETY

Administrative clarity does not assuage student anxiety. Although (at least for me) student responsibilities in the course were clear, every semester started off with anxious student questions about what they were supposed to do. The first weeks were always full of anxiety, presumably because there was no *subject* for students to learn. How would they know that they had done what was expected if they couldn't measure the amount of learning that had taken place against the standard of the total subject to be covered? Although those were seldom the words used, this seemed, to me, to be the central issue of their tense questions about assignments, what readings would be satisfactory, and how their own presentations should be structured. If I answered that they had wide latitude to do as they wished with the bounds of the general assignment, that was seldom satisfactory to them. If I listened to their proposal about what they intended to do (once they had gotten far enough to make a proposal to me) and said, "Yes, that would be fine," they were more likely to be satisfied. I'm not sure anyone ever realized that,regardless of what he or she proposed, my answer was almost always affirmative.

POWERFUL STORIES

The structure allowed powerful personal stories to emerge. Students repeatedly revealed intense personal histories that described their complex journeys to reach current professional standing. Many reflected back on childhood events—the experience of caring for a disabled sibling, the trauma of family tragedy, or having to confront discrimination—to emphasize how they were currently integrating teaching and therapy in their work. Lesley University graduate students are primarily adults with significant life experiences. The opportunity to describe how they viewed themselves as professionals in this setting allowed them to reflect not only on their "official" professional training and situation, but also to talk about how their whole lives had influenced their current professional standing.

"COVERAGE"

A further consequence of the course was that over a period of time many of the major current controversies in education surfaced in the class. Unfortunately, the number of students from

therapy fields was relatively small, often only one or two of the ten to 20 students enrolled, so that the professional concerns of this field were not well represented. But there were sufficient education students so that topics prominent in the professional literature and the national press, such as multicultural education, inclusion, conservative challenges, equity, testing and assessment, and community control were discussed in class. I could not have chosen "topical issues in education" more accurately than the way they naturally surfaced in the class.

Thus, one concern of many educators about "coverage" if students are allowed to follow their own interests, turned out to be irrelevant. On reflection, this is not too surprising. The students, all practicing professionals, live in the same world we do and they are affected by all the perplexing issues and quandaries that give rise to debate and discussion in their fields. When asked to comment about their work, these bring these topics to the table.

STUDENT WORK

Student work in the course was generally of high quality and certainly substantial. The amount of reading required for the course was much more than I could ever have assigned on my own. Although I cautioned them to keep these weekly readings brief, on average, they assigned hefty background pieces, not infrequently two or three articles, when one was all that was asked for.

CONCLUSION

The constructivist instructor faces a complex challenge: how to organize a course so that students are engaged and can progress in developing a deeper understanding of material, while simultaneously keeping a course moving and defining a teaching role.

The energy generated by a room full of students free to pursue their own interests can be magical. However, in the constructivist classroom the instructor has less control of the class dynamic than he or she does in a more traditional one. Student discontent is simply more visible (as is student enthusiasm) when the instructor does not provide the content of the course. So classes varied from semester to semester, and the spectacular evenings of most years, were offset by the few semesters when I found it painful to face another three hours that were sure to include a wrangle about "requirements" or difficult exchanges between students.

What I do know is that it is possible to create effective constructivist environments, and that I wouldn't teach any other way.

ACKNOWLEDGEMENTS

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