Con/testing Learning Models

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Abstract:

Projects that seek to disrupt hegemonic pedagogical practices in schools have usually faced high levels of resistance, from both teachers and students. I contend that this is because they have implicitly contested the underlying metaphor about learning through their attempts to challenge the power/knowledge systems that perpetuate inequities and sustain the current regimes of truth in society. As Anna Sfard (1998) highlighted, for centuries we have based our learning models on a metaphor of "acquisition", and it is only in recent years that learning models such as Jean Lave and Etienne Wenger's (1991) "situated cognition" have shifted to "participation" as the underlying metaphor. This paper shows how both metaphors can be seen as continua with extreme positions having a passive or active orientation. For example the passive end of the acquisition metaphor is where the transmission model of learning sits, while radical constructivism is at the active end. In this paper I show that while situated cognition is a participatory learning model, it still has a passive orientation. I show that the commonly resisted innovative pedagogical practices frequently use a new model of learning as their referent: one located at the active end of the participation metaphor. I propose that this learning model is "critical activism", illustrate how it draws on critical and feminist pedagogies, and argue that it re/presents a way forward for classroom practice.

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I choose to use the terms "cognition" and "learning" as synonyms throughout this paper. As Brent Davis and Dennis Sumara explain, this is:

> a linguistic move that is intended to trouble the notion that personal knowledge can be static. Thought is dynamic and always in flux - that is, it is always caught up in new learning. (Indeed the word 'cognition' derives from a Latin root that means 'to learn') (Brent Davis and Dennis Sumara, 1997, p. 106).

Change projects that seek to disrupt hegemonic pedagogical practices in schools have usually faced high levels of resistance, from both teachers and students. In my view this is because they use an unarticulated and fundamentally different learning model to inform their pedagogy. For example critical and feminist pedagogies use a referent learning model that is not named or recognised as a distinct model. It is the purpose of this paper to do such a naming and an opening up of a space where new dialogue about learning can occur. I have chosen to do this from a frame of reference of science education, but the model is transferable across fields.

Hegemonic Pedagogy and the Pedagogic Contract

On seeing a bumper sticker saying, "subvert the dominant paradigm" James Gallagher was prompted to consider what it might be in teaching. He concluded that it involved the following premises:

- Teaching is equated with transmitting information to students.
- Learning is equated with acquiring that information, quite frequently by memorization.
- Assessment of learning is summative, to determine which students have been successful in acquiring the information (James Gallagher, 1993, p. 181).

The high level of consistency in the pedagogical practices used by teachers has created a sense of what is "normal" and what is "other" in classrooms.*Hegemonic pedagogy* is thus the set of teaching practices that have become dominant over time and that perpetuate power/knowledge inequities and sustain the current regimes of truth in society, i.e. the pedagogy used by most of the world's teachers. For example, students "have a certain expectation of a science lesson when they walk into the room (especially if that room is a laboratory)" (Susanne Lakin and Jerry Wellington, 1994, p. 186). As one of the teachers in their study said:

> They don't expect reading and discussion or drama and role play - they do expect bunsen burners and practical work. They don't want to learn that science is not a set of facts, that theories change and that science does not have all the answers - they want the security of a collection of truths which are undisputable. They see little place for their own interpretations or theories but want to know what should happen in a particular investigation and what this proves (teacher quoted in Susanne Lakin and Jerry Wellington, 1994, p. 187).

Recipe practical work is expected when the room is equipped with the infrastructure (benches, water, gas) and tools (microscopes, air-tracks, test-tubes) of hegemonic pedagogy as it is played out in science classrooms. The daily interactions that create the lived experience of pedagogy in classrooms incorporate clear expectations of how the *" pedagogic contract"* will operate within the particular context of a classroom or school culture. I have re-labelled this term, called the "didactic contract" by Guy Brousseau (1986) because I believe that it will now sit more comfortably with English-speaking teachers/researchers to whom the word 'didactic' is clearly associated with transmissive teaching.

The pre-existing pedagogic contract has been generated by the collective approaches used by teachers in the past: and the particular set of pedagogical practices that has become so established that they form hegemonic pedagogy. Teachers who look to the future, and to re-inventing pedagogy so that is inclusive of all students needs whilst it also challenges ways of thinking with/in any field, must choose to construct and offer their students a re/vision of the pedagogic contract - a new way of operating in their classrooms.

The pedagogic contract includes pragmatic factors such as: whether students are expected to talk and/or to listen; whether students are expected to answer questions and/or ask them; whether a climate of problem posing and/or problem solving exists; whether students are expected to produce and/or reproduce knowledge; whether negotiation occurs in both what and how science, or any field, is taught; whether there exists a climate of support for diversity among students; what particular learning activities and forms of writing are acceptable practices.

The pedagogic contract sets the tone of the teaching-learning relationship between students and teacher(s) - a relationship that requires a level of trust on behalf of the student that the teacher will indeed use their competencies, knowledge and skills to facilitate learning. The student-teacher relationship, fragile that it always is, is perceived quite differently by male and female students. Boys tend to de-personalise, "express anger and disappointment" when they perceive "poor teaching", whereas girls tend to react quite differently, and are open to "much greater personal vulnerability" when poor teaching is constructed by them as the teacher making them "feel stupid" (Fran Davis and Ariene Steiger, 1993, p. 736).

For the boys, the problem is an external one, beyond their control and not linked to their sense of self. To the girls, however, the problem is perceived as internal, a difficulty that threatens their own self-perception as learners. It is perhaps, more important for girls to feel confidence and trust in the pedagogic contract that the teacher offers them: for boys the contract can be broken with few consequences on their personal image of themselves; for girls however, a break-down in the pedagogic contract, a failure to learn through the teacher's efforts, is perceived as a threat to the student's personal resources as learners.

A pedagogic contract that enables all students to feel confident that they are learning would be a precious one.

Any time a teacher chooses to break the conventions, the prevailing norms, of the pre-existing pedagogic contract, they must expect student resistance and be prepared to justify why such a break is occurring. Just such a situation arises when teachers ask their students to move from a model of learning based on transmission, to one based on constructivism; another occurs whenever teachers ask their students to write non-"factual" pieces in a science class, or to re/view the language tools used in the media to persuade the reader/listener. I think that any transgressing of the borders around hegemonic pedagogy is interpreted by students as a break in the pedagogic contract and is therefore to be resisted.

Con/testing the Metaphors for Learning

Innovative teaching practices are frequently unsuccessful because, I contend, they have implicitly contested the underlying metaphors about learning and are therefore seen as a break in the pedagogic contract.

When considering the frames of reference that influence teachers' practice, "of central importance is the teacher's conception of what constitutes learning" (Douglas Barnes, 1992, p. 20). Within the teaching community the constructed discourse on learning is that the 'natural' pedagogy is "based on an objectivist theory of knowledge" or epistemology (Catherine Milne and Peter Taylor, 1995, p. 39). Thus hegemonic pedagogy draws on a model of learning that largely operates from the transmission end of the learning continua, where students are perceived as acquiring or collecting knowledge and skills and are passive recipients of frequently didactic teaching.

But now there are strong contestations of hegemonic pedagogy. Over the last fifteen years there has been a Kuhnian revolution in thinking about pedagogy in secondary school science, for example, so that the preferred epistemology among science education researchers and teacher educators (and many classroom teachers) has become one or another branch of constructivism, from radical to social (Catherine Milne and Peter Taylor, 1995). The constructivist model of learning is the currently dominant paradigm that informs much of the world's science education research even if not its science classroom practice (e.g. Peter Hewson, 1981; Rosalind Driver, 1983; Roger Osborne and Peter Freyberg, 1985; Ernst von Glasersfeld, 1995; Ken Tobin, 1993; David Treagust, Reinders Duit, Barry Fraser, 1996). Constructivism, as applied to science education, has several antecedents - not the

least significant being the work of Jean Piaget (e.g. 1970) and Ernst von Glasersfeld (1995) - and is the loudest contestant voice of hegemonic pedagogy in science at the moment.

Three central principles of constructivism are that: a) "learning involves mental construction of knowledge by individuals, rather than absorption from external sources"; b) the "concept of absolute truth" is replaced with the "concept of viability"; and c) "knowledge construction is a social and cultural process mediated by language" (Catherine Milne and Peter Taylor, 1995, p. 40). For example, in discussing how effective learning experiences may be arranged for students, the Australian National Statement on school science (Australian Education Council, 1994) presents a constructivist perspective. It articulates the importance of "taking account of students' views" (p. 5) and "recognising that students construct their own understandings" (p. 6).

A pedagogy based on constructivist epistemology as a referent might go through the following steps: orient students to the topic; elicit students' prior ideas; build an awareness of a scientists' views and restructure students' views to match through a series of activities where their previous ideas are challenged through cognitive conflict; help students construct a new view; apply the new view. This model provides teachers with a way of responding to the learners' "conceptual change model" articulated by Peter Hewson (1981, 1996).

There are now also other contestations of hegemonic pedagogy. One of these is a pedagogy that uses social constructivism as a referent model of learning. It builds upon the models of Lev Vygotsky (1962, 1978) where "personally meaningful knowledge" is constructed within sociocultural contexts where "shared understandings" develop through interacting with more knowledgeable others in the "zone of proximal development". Lev Vygotsky argued that language mediates thought in a dynamic, interactive way and that social interaction between students and between students and adults is essential for learning and development. "Scaffolding" is thus a key concept in the Vygotskian model where teachers support students through initial learning with linkages that they appropriately remove as the student learns.

The current paradigm shift from fundamentally Piagetian views of learning in science to Vygotskian views, articulated well by Ann Howe (1996), is re-framing the thinking about pedagogy in science educational research as it re-constructs the discourse about what is seen as good practice. Anne Howe presents a compelling argument for the crossing of borders in science education research so that radical constructivism, whose genealogy can be traced to Piagetian models, and socio-cultural approaches, traceable to Vygotskian models, can both be accommodated in a productive manner. I support this move of border crossing entirely, agreeing with Gary Thomas (1997) that we do not have a "grand theory" of learning that is not flawed in some respect.

While constructivism, whether radical or social, has a lot to offer pedagogical practices in science, there are three grounds for critique of it that mean I cannot totally endorse it as it is realised in science education.

First, the conceptual change model that has grown out of constructivist ideals (Peter Hewson, 1981, 1996), a model that has been widely adopted in science education research around the world, is contestable. A key facet of this model is that a scenario involving cognitive conflict is set up by the teacher so that students are forced to reconsider their firmly held alternative conceptions. The cognitive conflict approach is adversarial and many females find it "debilitating rather than energizing" because they are "already consumed with self-doubt", particularly in science, I suggest. The cognitive conflict model merely exacerbates girls' "sense of themselves as inadequate knowers" (Mary Belenky, Blythe Clinchy, Nancy Goldberger, & Jill Tarule, 1986, p. 227-8). Mary Belenky and her colleagues

(1986) argue that a "connected model" of learning would move females toward "community, power, and integrity" (p. 228), using relationships and collaboration rather than conflict and appeals to authority as the basis for learning. The currently in favour conceptual change model may suit men's and boys' ways of knowing but it is not necessarily a good model for women and girls.

A second concern with constructivism is that:

> there is a real danger that the elicitation of pupils' prior ideas *always* leads to those ideas being replaced ... The assumption ... is that pupils need their ideas to be replaced with more scientific ones (Michael Reiss, 1993, p. 39, italics in original).

Michael Reiss proposes that teachers might be better to assume students' frameworks "have so far served them well" and the task of the teacher would be to show students why these ideas have worked for them in the past, and encourage a change in "their thinking, not so much as having it proved wrong to them, but by pursuing it into new areas" (Michael Reiss, 1993, p. 39). This approach may encourage a diversity of ways of looking at scientific problems and not assuming that current Western science paradigms are the 'truth'.

The third concern that I have is that the ultimate effect of the constructivist model of learning is to view learning as collecting knowledge - or adjusting existing knowledge so that it aligns with current ("scientific") models. Certainly it is an *active* collection process, but collection none-the-less.

Anna Sfard (1998) argues that both the passive transmission model of hegemonic pedagogy and the active constructivism model of the ascendant contesting voice, are based on a single metaphor. She has dug deeply into the genealogy of the discourses on learning and has distinguished two driving metaphors: the acquisition metaphor and the participation metaphor. She argues that for thousands of years our thinking about learning has been driven by the *acquisition* metaphor, when we have conceived of learning as acquiring or collecting knowledge as if it was an object, or a set of objects. I have represented the acquisition metaphor at the top end of Figure 1, below, and shown how transmission (at point A) and constructivism (at point B) could be seen as opposing ends of a continuum of learning models from passively collecting knowledge to actively constructing knowledge. The common theme is the notion of acquiring knowledge. Many teachers would combine elements of both A and B so a 'both/and' rather than 'either/or' combination of models informs their pedagogy. The metaphor for the learner at point A is a *sponge* (soaking up knowledge) and at point B is a *builder* (constructing their own frameworks).

There are also further contestations of hegemonic pedagogy by more recent models of learning that fundamentally differ in that they are built on a*participation* metaphor. In these models learning is conceptualised as acting or doing, participating in a community of practitioners, somewhat akin to an apprenticeship model. Jean Lave and Etienne Wenger (1991) have constructed a widely utilised conceptualisation of "situated learning", a view of learning that draws on Vygotskian ideas and places an emphasis on the social character of learning and the negotiation of meaning. Situated learning is a process of participation in "communities of practice"; participation that is, at first, "legitimately peripheral" but that gradually changes in engagement and complexity as the learner becomes less of a "newcomer" and more of an "old-timer". Jean Lave and Etienne Wenger align learning with performing tasks: arguing that by engaging in the performance of tasks in ways that are congruent with those of the expert practitioner, learners also engage in discourse as part of that practice, negotiating meaning as they learn how to act in the community of practice (Jean Lave and Etienne Wenger, 1991).

What has troubled me about situated cognition is its passivity, its acceptance that science-as-is (or any other community of practitioners) is not altered by the small perturbation caused by the addition of a new learner, a "legitimately peripheral participant". The new learner is simply inculcated into the current power/knowledge regime of the community. All of their practices and discourses are assumed to be exemplary and beyond critique. In this way situated cognition can be seen to still bear traces of the acquisition metaphor in that the discourse and performative practices of expert practitioners are passively acquired by the newcomer. Certainly, situated cognition is positioned at X, the passive orientation of the participation metaphor. The metaphor for a learner at point X in Figure 1 is of an *apprentice* (learning by following/copying the "master"). This model does not sit at all well with me from a poststructural feminist standpoint.

Science teachers who use practical 'exercises' to teach students to be scientists are using the participation metaphor, at the X end of the continuum in Figure 1 below. Even constructivist teachers who support students to design original practical investigations are still engaging with the position of situated cognition at X in Figure 1 below. That is, they are applying their model of how scientists work and in doing so are inculcating students into science-as-is, via a *passive doing* model. There is usually no expectation that students will then, or later, critique or challenge the *status quo* of the 'scientific method' or the practice of hegemonic science. These teachers are drawing on a combination of active constructivism (point B) and passive situated cognition (point X).

The possibility of a new learning model emerges. My project with/in science education is to problematise and contest conventions of co-option into an essentialised science because of my conviction that feminist and other critiques provide sufficient grounds to not desire a re/production of hegemonic science and how it is learned. This new learning model may inform a pedagogy that works towards this purpose.

I contend that the participation metaphor can also generate an alternative model of learning to situated cognition, and I have filled the gap at Y in Figure 1 with one. I have struggled to conceptualise it in a compressed name but have tentatively called it the *"critical activism"* model of learning to signal the metaphor of the learner as a critical activist. I have used a fine line to border it to signify its current invisibility in the literature on learning models.

Figure 1 Metaphors and Models for Learning

• *the dark lines represent continua*

• *the fine lines indicate a position that is invisible in the literature*

acquisition **metaphor**

A **Transmission:**			**B** **Constructivism**

- passive collecting informs hegemonic pedagogy (sponge)			*- active collecting* ascendant in science education research (builder)
PASSIVE			**ACTIVE**
Situated cognition: inculcation into community (apprentice) **X**- *passive doing*			**Critical activism:**critic/activist with/in the community *- active doing* **Y**

***participation* metaphor**

Many others have adequately contested transmission, and I have already problematised constructivism, so I will now return to my concerns with situated cognition, apart from its previously mentioned passive orientation.

First, I think that a student can learn *about* a field, without always engaging solely in the activities of the experts within the community of practitioners. That is, in learning science, I want more than students to be passively inculcated into 'science-as-is'. Second, I also want students to be actively thinking, informed and engaged critics of: the social world of scientists as it constructs their practice; of the impact that science has on society; and of the power dimensions involved in the scientific community and the ways these are used politically, economically and socially to support particular authoritative positions and to oppress other perspectives in society. This cannot be done as a seduced peripheral participant, abiding by the discourse patterns and performative practices of the scientific community.

I think that learning science in school is a broader project than learning to become a scientist just as learning music in school is more than becoming a musician. First, I, and other feminist science educators, seek an actively critical perspective for those who do pursue

science - a perspective that requires a deliberate stepping back from the frame of reference and discourse patterns of the community of practitioners in order to see aspects to which the "expert" practitioners themselves are blind (e.g. the distinction between the nature of science as it is practised and as it is professed to be). Second, I do not believe any science teacher expects all their students to join the community of practitioners, to become scientists, any more than all music teachers expect all their students to become performing musicians. But I believe that most science teachers would intend that all students will become informed and competent users and critics of science, able to actively contribute to personal, local and society's debates and to be unintimidated by 'scientific' arguments that affect their physical and social worlds. This is what I call scientific literacy. A similar argument could be put for music or any other school field.

While the notion of transformative participation is built into Jean Lave and Etienne Wengers' conception of situated learning, they suggest that change occurs from within, not from outside, the community of practice. This is my third concern with situated cognition: its assumption that only experts within a community of practice are deemed to be able to change that practice. Yet history abounds with many outsiders being able to change internal practices of communities of which they were not a member. Frances Bacon and science leap into my mind as one significant example. I therefore contest the limited conception of how practice may be transformed that is articulated in the situated cognition model.

Critical Activism: A New Model

The effect of the learning models at A, B and X in Figure 1 is to inform pedagogies that "reinforce and reproduce existing discourses-practices" rather than support one that enables reflection, critique and active challenge to current power/knowledge systems (Cleo Cherryholmes, 1988, p. 43). The point at Y indicates where such a new learning model might be located.

My 'critical activism' model of learning would involve participation, or praxis, that integrates the processes of reflection, critique, and active challenge to power/knowledge as-is. This new model has two fundamentally alternative premises to current learning models even though it shares the participation metaphor with situated cognition and the active orientation with constructivism. First, in the critical activism model of learning the concept of participation is broadened to include both participation *in* a community of practitioners, and/or informed and engaged participation *with*such a community. In the case of science, this would mean both participation *in* science (doing science) and/or participation in debates *about* science (challenging science).

Second, my critical activism model incorporates an actively critical perspective to participation, where the practices of the community, their discourse, their task performance, and their ideological positionings are contestable, not merely self-perpetuating through the passive accommodation of the novice. Under the critical activism learning model students learn to be actively critical with/in a community and to be activists for change.

Learners/participants are thus conceived of as capable of changing the practices and discourses: *activists in* the community and/or *critics* engaged *with*the community of practitioners. In Figure 1, I re/present this notion with a shorthand expression: "critic/activist with/in the community". It is the critical activism corner that seems like a worthwhile learning model to me because it depicts learners as people who are actively thinking and engaged in ongoing critical analysis and reflective criticism of discourses and practices with/in a community of practitioners. People (including students) as critical activists.

The Learning/Pedagogy Dialectic

Teachers' pedagogical practices are informed by the learning models they use as referents. If a teachers tells, they are using a transmission model; if a teacher provides opportunities for students to reflect on their current views, challenges them and supports an active re/thinking of their positions then constructivism is the base model; if a teacher uses modelling and experiential learning then situated cognition is the referent model. The learning/pedagogy dialetical relationship is fraught with tensions and possibilities, however, as we reveal our underlying beliefs and values through our practices.

> To invoke the importance of pedagogy is to raise questions not simply about how students learn but also how educators ... construct the ideological and political positions from which they speak (Giroux, 1992, p. 81).

Most of us teaching in the real world draw on an eclectic mix of learning models without being explicit with students, and sometimes ourselves, about our fundamental positioning and purposes.

I think that commonly resisted innovative teaching/learning practices frequently use a "critical activism" learning model as their referent - one located at the active end of the participation metaphor - and this implicit breaking of the conventions of the pedagogic contract results in such innovations being ultimately unsuccessful. I think that the underlying learning model ought be explicated with students and a new expectation of critique and action deliberately developed before pedagogies that use these premises will be widely accepted.

Links with Critical and Feminist Pedagogies

My schema of learning models acts as an advance organiser of my further thinking about an *enabling pedagogy* (an explication of which is beyond the borders of this paper) that draws from the underlying principles of learning used with/in critical and feminist pedagogies. All three pedagogies draw, I argue, from a critical activism model of learning.

Critical pedagogy opens up new visions of society "by combining a language of critique and possibility ... a discourse of imagination and hope" for a better world (Henry Giroux, 1991, p. 52-3).

> Knowledge is a *social construction* deeply rooted in a nexus of power relations. ... Critical pedagogy asks how and why knowledge gets constructed the way it does, and how and why some constructions of reality are legitimated and celebrated by the dominant culture while others are clearly not (Peter McLaren, 1989, p. 169).

From *critical pedagogy* I incorporate into my idealised *enabling pedagogy*, a desire to:

- prioritise ethics and a work towards social justice;
- challenge the ways schools perpetuate power structures in our society;
- support teachers in reflecting on our complicity in this perpetuation;
- show students that knowledge is socially constructed - and is not the 'truth';
- assist students in deconstructing knowledge to see how and why it is that way and whose purposes it serves, teaching them to "read the world differently" and "resist the abuse of power and privilege" that abounds (Henry Giroux, 1991, p. 49);

- "create new forms of knowledge through ... breaking down disciplinary boundaries and creating new spaces where knowledge can be produced" (Henry Giroux, 1991, p. 50)
- support teachers to be courageous in taking risks that alter past practices;

However, I must reject from critical pedagogy:

- the notion that reason, logic and rationality will prevail in changing schooling;
- the authoritarianism of the teacher who presumes to know how the student should/could be empowered.

> By focusing on empowerment, feminist pedagogy embodies a concept of power as energy, capacity, and potential rather than as domination ... Under conceptions of power as capability, the goal is to increase the power of all actors, not to limit the power of some (Carolyn Shrewsbury, 1987, p. 8).

In feminist pedagogy power is not merely about righting imbalances of limited power, but about spreading power around as if it is in endless supply, like love.

From *feminist pedagogy* I incorporate into my idealised *enabling pedagogy:*

- a recognition that experiential learning matters;
- the concept of power as "energy, capacity, and potential" rather than as domination (Carolyn Shrewsbury, 1987, p. 8);
- a recognition of the interactivity of knowledge and people;
- support for connections, networks, and social environments that support mutuality as well as individuality;
- a utilisation of an emotional dimension that draws on notions of desire and pleasure, and the importance of feelings;
- embedding knowledge within its holistic frames - not abstracted fragments;
- a respect for diversity among people in who they are and how they learn;
- the fostering of critique, decision-making, and negotiation skills;
- an ethic of care for each other, our social networks, and the physical world, our environment;
- the use of language in multiple ways including play and subversion;
- catering for a (female?) need to understand deeply, not superficially;
- seeing silence as a process of thinking/knowing/resisting; and
- the honouring of "the private, personal, and the subjective as well as the public, impersonal, and objective" (Paula Roy and Molly Schen, 1987, p. 111).

Another trio of purposes I take from feminist pedagogy, that are worth distinguishing from the general list above, are:

- working towards providing access and success for girls/women into all disciplines, including science (a liberal feminist standpoint);
- building a pedagogy that values girls' and women's experiences, their learning preferences, and their interests, needs, values, concerns (a radical feminist standpoint);
- enabling the active deconstruction of language practices to expose underlying assumptions in discourses (and the embedded models, metaphors and theories) to open up spaces for contestation and alternative interpretations (a poststructural feminist standpoint).

While this last trio of contributions from feminist pedagogy come from competing feminist standpoints, and in themselves are contradictory, I think it is important to be flexible in shifting between standpoints and frames of reference (Hildebrand, 1995) in order to build a pedagogy that is not static or singular.

Above all else, pedagogy must remain fluid and flexible, slippery and situated, capable of being reconstructed with/in each context and each relationship that develops between and among the teacher and her students.

This is my hope: critical activism could be a useful referent learning model for a new pedagogical model, an *enabling pedagogy*. I stress, however, that in the complex realities of daily practice, teachers (including myself) use a combination of learning models to inform our pedagogy. Thus, I seek a pedagogy drawing on constructivism and critical activism: *both* active acquisition *and* active participation. To re/construct education for the next millennium, I agree that teachers must engage a "caring heart with a critical eye" (Joan Wink, 1997, , p. 148-149) to develop an enabling pedagogy that is based upon an *active participation* model of learning, perhaps called *"critical activism".*

The challenges of teaching/learning that we currently face daily (such as: new learning technologies, teaching for metacognition and life-long learning, authentic learning, teaching thinking, integrative learning, learner-driven learning, collaborative learning) may be more successful if we think through the possibility of a *critical activism* learning model as a fundamentally new way of thinking about the process of learning and how it informs pedagogy. This new learning model, and the expectations it generates, will need to be made explicit for students so that the new pedagogies are not resisted as merely more attempts at a break in the pedagogic contract.

References

A note on using authors' first names:

Like Christina Hart, (1995) I have chosen to use the first names of authors to signify that all our 'theories' and arguments are constructed by people, acting as (disembodied) researchers. I feel that first names create a more personal connection with the author and remind us that we all look through frames of reference that re/present our multiple subjectivities.

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