MEDIATING TECHNOLOGIES: TEXTS FOR CHANGE

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Computer artifacts are anything but socially neutral learning tools. The presence of computer-based technologies not only influences the thought processes of both teachers and students, but also affects the rhythms and ordering of classroom life. This article describes one teacher educator's efforts to structure occasions for teacher candidates to press beyond habitual and ordinary ways of making sense of relations of classroom practices and educational uses of computers. Joining the conversation are the voices of seven teacher candidates who participated in the Mediating Technologies Module.

Introduction

The use of computers is now mandated to be a regular and regulated event in the school lives of youngsters (i.e., a directive has been written into formal curriculum documents[1]). It is not surprising, therefore, to find that many Teacher Education programs try to include some form of instruction in computer technologies in their curriculum for pre-service teachers. Such instruction might focus on using the computer as a teaching tool, making presentations (using Power Point, for example); or on how to assess and choose from the vast range of educational software tied to various curriculum expectations that is now available. While the focus in such classes is on the "how to," Bowers observes: "…not possessing a deep knowledge of the cultural/existential mediating characteristics of technology, most teachers are limited to socializing students to the uses of technology…" (1993: 3). Further, Brent Davis, Dennis Sumara, and Rebecca Luce-Kapler suggest that educators orient their attention beyond the objective skill acquisition with computers to also consider the influences of computers on the qualities and ordering of teaching and learning experiences. As Bowers observes "few teachers understand how technology influences thought, social relationships, or affects the forms of knowledge communicated from one generation to the next." (1993: 3).

Computers, like all cultural artifacts, carry social meanings, and thus influence the quality of both the learning and teaching experience. Sumara remarks on "the authority attached to the computer by its inclusion with the formalized institutions of public schooling and by the way in which it exists in terms of the relationships between students and teachers" (2001: 173). I believe Sumara is calling upon teachers to think critically about the use of computers and the implications for children's development as learners and as part of the social community within and outside the classroom. In what ways might the use of computer technologies forge community within the classroom? In what ways might the instruction use of the computer technologies highlight preexisting social inequities in the classroom and beyond? In what ways does the use of computer technologies effect teaching, learning, and classroom interactions? Judy Iseke-Barnes contends "research needs to look closely at the human element in computer interactions and to question the pedagogic and epistemological stance in educational computer settings (1997: 209).

The following article presents the story of one teacher educator's effort to make a curricular intervention that responds to the call of Bowers, Sumara, and Iseke-Barnes. The goal was to assist pre-service teachers to consider and discuss: 1) the required use of computers to meet curricular expectations, and 2) the social inequities that exist within schools, which may be exacerbated in human-computer interactions. Towards this aim, I developed the *Mediating Technologies Module,* as a component of a pre-existing "Foundations Course," to broaden the awareness of teacher candidates about the current realities of school (e.g., the physical spaces, institutional and curricular demands, and available resources) affecting the use of computers in the curriculum. The purpose of this three-week module was not only to broaden awareness, but also to encourage teacher candidates to consider possibilities for making positive interventions to existing social inequities.

The *Mediating Technologies Module*

In the academic year 2002–2003, I designed a course module that brought together considerations of social inequities, of how computers are used, and of teaching practices in school settings. The

Mediating Technologies Module was nested within the preexisting Foundations course offered in a pre-service teacher education program at a large university in southern Ontario. The *Mediating Technologies Module* had three components:

1. In-class sessions and assigned readings focusing on the presence and use of computers in the classroom, the computer-related Government of Ontario curriculum guidelines, and human and cultural elements related to the use of computers
2. An assignment I named *Layered Texts,* to be completed in conjunction with the participating teacher candidates' in-school practicum placements. The *Layered Text* assignment was designed to offer an occasion for teacher candidates to notice and consider social inequities as they are demonstrated through student and teacher interactions with computers, and to consider possibilities for transforming the observed social inequities
3. A shared, communal envisioning of ways that teachers can individually and collectively move beyond simple adherence to the directives of school authorities, and expectations preset by the formal curriculum documents, to consider possibilities for fuller and more equitable participation of all children in the classroom.

In-Class Sessions & Assigned Readings

In the in-class sessions of the *Mediating Technologies Module,* I placed emphasis on thinking about qualities and patterns of social interactions related to the presence and the use of computers in the classroom. The Government of Ontario's curriculum guidelines (elementary stream) were also considered in terms of their influence on curricular planning and patterns of interactions involving computers. I created a small reading kit for these in-class sessions, which included readings that considered the cultural influences of computers on learning and everyday relations, with a particular emphasis on matters of social equity (Bowers, 2000, 2002; McLaren, 1998; Sloan, 1984; Stalder, 1997).

Throughout the full year course, Educational Foundations, I was deeply committed to pursuing questions concerning educational equity, and the close study of disparities that may arise through poverty, racialization, gender discrimination, and perceived ability, to name but a few themes we addressed. My intent for the *Mediating Technologies Module* was to involve beginning teachers in thinking practices that would help them to position themselves, current curricular directives, and the realities of how children are using emergent technologies, in a critical relationship, through a range of group and individual writing activities (Smith, 1999).

It is one thing to develop a course module with what appeared (to me, from my vantage as a course instructor and curriculum designer) to be clearly articulated intentions, but how did the teacher candidates perceive my efforts? Following William Ayers, I view my teaching as "an invitation offered and an act of faith. It is filled with hope and undertaken without guarantees" (Ayers cited in Edgerton, 1993, p. xxv). There is always a gap between our intent as educators (what we think we are doing), how we are actually doing things, and how learners take up our efforts. What learning activities, if any, did my students find helpful in relation to their own evolving perceptions and beliefs about the relationships between social equity and the use of computers in classroom practices? To engage with such questions, following the completion of the course, I pursued a follow-up study to the *Mediating Technologies Module*.

The Study & the Participants

Upon successfully graduating from the Teacher Education program, seven female beginning teachers who had taken the *Mediating Technologies Module* volunteered to participate in the follow-up study, which consisted of interviews and focus group discussions.

Given that the *Mediating Technologies Project* took form within a particular historical moment, my interest was the perceived relevance of the Module to a particular cohort of teacher candidates. Although the documents the students produced exists as a data set to be explored in different ways at a later date, my initial interest was not in a mapping of the social iniquities they could or could not perceive, nor in a study of the frequency with which students observed one type of iniquity versus another in relation to their own social identities. I was interested in their own perceptions about how the exercises they

were assigned strengthened their observational and analytical capacities: could they tell me about how they developed a praxis of noticing and coming to know through the assigned exercises?

For the purposes of both data collection and interpretation in this follow-up study, I drew on a cluster of approaches including praxis-oriented research (Smith, 1999); participatory consciousness, (Heshusius, 1992) and critical feminist sensibilities.[2] When braided together these three streams of thought (research as praxis, participatory consciousness, and critical feminist sensibilities) formed the hermeneutical frame through which I considered and *learned from* the transcribed interviews with the seven participants and my re-readings of associated textual artifacts (e.g. assignments).

In the following sections, I elaborate further on the *Mediating Technologies Module*. Joining the conversation are the participants of the follow-up study, who share some of their ideas, and reflect on and describe their experiences of engaging in the activities in the course.

Layered Texts = Critical Fictions + Representations of the Possible
The *Layered Texts* assignment evolved out of the recognition that learning and teaching occur in schools that are ordered by disharmonious relations of social power (Willinsky, 1998). The *Layered Texts* activity studied the use of computers in school settings, with their associated power imbalances and inequities. I asked teacher candidates to assume the role of teacher-researchers, and to examine regular, well-intended classroom activities involving computers, to see if or how these activities contributed to unintended lessons (e.g., cultural-centrism, classism). This gave teacher candidates an opportunity to better appreciate their own centrality in making meanings in and about educational settings and research processes (Britzman, 2000).

The *Layered Texts* assignment was designed to assist prospective teachers to press beyond habitual and ordinary ways of viewing the use of computer technologies in the classroom, and to offer these teacher candidates occasions to consider social experiences associated with computer use in school settings. To begin their work on the *Layered Texts*, teacher candidates were asked to engage in *noticing* during the initial days of their practicum placement — to render unfamiliar the ordinary routines of classroom life. The teacher candidates were asked to observe classroom interactions, especially those involving computers, and to note possible social inequities within the classroom that they were observing. To anchor their noticing, they were asked to focus on how students interacted with computers, paying particular attention to a single classroom event (of their own choice) and watching how it unfolded.

I designed *Layered Texts* as an assignment with two distinct exercises. The first, *Critical Fictions,* challenged the students to write about what they had noticed in the classroom, and to do this in an engaging and creative way. The second, *Representations of the Possible,* asked them to create an alternative reality in which an intervention they made changed the relational dynamics of their classroom. In our class discussions, these two strands were plaited together by students as they explored the power a teacher has to shape a classroom's cultural ecosystem.

Critical Fictions
The first strand, *Critical Fictions*, asked teacher candidates to document their observations of classroom interactions involving computers in narrative form (prose or poetry, or both). Walter Doyle and Kathy Carter (2003: 130) explain the value of story-telling experiences:

> A story by its very nature resists singular interpretation…. A story captures nuance, indeterminacy and interconnectedness in ways that defy formalistic expression and expands the possibilities for interpretation and understanding.

Thinking within a framework of imaginative writing, might, I hoped, enable teacher candidates to write beyond the confines of conventional academic prose. The structure of the assignment oriented the teacher candidates to writing and telling stories as a tool for thinking through complexities of school life. Through the writing of their *Critical Fictions,* the teacher candidates could offer expanded insights into the dynamic relationships and events that unfold in classrooms daily. The teacher candidates' stories

addressed such themes as social labelling (e.g., "computer geek", a term used to describe people who are most socially fluent in computer mediated situations; an affectionate self-descriptor used by members of a sub-cultural group, and also a hurtful pejorative, depending on who is applying the label), classroom insufficiencies (e.g., a one computer to share among thirty students), learning and teaching approaches (e.g., collaborative learning), and cultural encroachment (e.g., culturally specific world views embedded in software applications, such as the imposition by the spell check program of American spellings on users of Canadian English, or the many names and familiar words spell check determines as incorrect). The *Critical Fictions* activity provided a textual space for teacher candidates to tell their own stories about classroom events they deemed instructive and significant.

Critical Fictions was purposefully structured so that the narratives would function as archival sites for further critical interpretation among the teacher candidates and perhaps serve to stimulate new knowledge and new frames of reference among the teacher candidates in the Foundations course. Class time was allocated for teacher candidates to share and to think through their narratives (e.g., to share stories about classroom observations and selected methods of representation) within small writing groups of approximately six to eight members. Teacher candidates were encouraged to draft a rough *Critical Fictions* and/or take notes for their *Critical Fictions* during this working and sharing session, with the support of their writing groups. *Critical Fictions* served as a starting point for the teacher candidates to expand their frames of reference about some of the culturally mediating characteristics of computers. Along these lines, one of the teacher candidates remarked:

> I have found that it [the *Critical Fictions* exercise] has not only heightened my awareness about the importance of technology, but more importantly the many inequities that exist around technology in our schools and how I can work towards preventing such inequities. The work involved in writing the *Critical Fictions* **taught me how to better see these inequities** especially in the area of computer technologies, which as we all know is becoming increasingly important in our lives.

Central to the experience of writing these *Critical Fictions* was "the situation of *discovery* of knowledge—its evolution, and its very *happening*" (Laub, 1992: 62). Dori Laub, speaking to the difficult complexities involved in the giving and receiving of traumatic testimony, adds: "Knowledge . . . [is] not simply a factual given that is reproduced and replicated by the testifier, but a genuine advent, an event in its own right" (1992: 62). Laub's words resonate with the words of some of the teacher candidates' descriptions of their experiences of writing their *Critical Fictions*. One stated:

> I wasn't as keen to sit back and look at the classroom until that assignment. When we started looking at the classroom because we had to do this essay, it was surprising how much you see. I would never have thought of looking at what happens at the computer. We saw the classroom differently.

Here, the teacher candidate suggests that the activity required a shift in perception, which in turn enabled her to become more aware of previously unnoticed details of classroom life. Similarly, in the following narrative, a teacher candidate describes how writing for her became a "method of inquiry" (Richardson, 1994). Her writing of the *Critical Fiction* was marked by a steady process of expanding and narrowing her focus until new insights about herself and her praxis took form.

> For me, writing the *Critical Fiction* was the first time that I actually looked inward and saw how my computer experiences and perspectives about computers would interact with my teaching.

When I asked the teacher candidates about their experiences working on their *Critical Fictions*, one responded by considering the scope of reflection she experienced. Her understanding of the assignment is illustrative of the quality of thinking I hoped might arise. Using experiences in the teacher education courses as her frame of reference, she mused:

> Working on this assignment was a self-exploration process as well as an opportunity to reflect on classroom interactions. I was discovering new things about myself in the ways that I looked at things and thought about things. I think it happened because you left the assignment a bit more open. Looking at computers in the classroom in

relation to equity issues isn't an issue that most people think about. It's something that teachers are really not that aware of: you don't stop to think about how you perceive classroom interactions in relation to computers.

It should be noted, however, that contrary to this teacher candidate's perception of the "openness" of the *Critical Fictions* assignment (and indeed of the *Layered Texts* project as a whole), the parameters of this learning activity were tightly defined: I articulated set expectations, delineated the boundaries of the activity, and outlined the subject that the teacher candidates were to address in their *Critical Fictions.* On the one hand, then, the *Critical Fictions* activity was generally perceived "as a bit more open" than the participants were accustomed to for the written work assigned in Teacher Education. I believe this is because the *Critical Fictions* activity involved the imposition of what Davis refers to as "liberating constraints" (2004). My aim for the *Critical Fictions*, and the *Layered Texts* generally, was to establish harmony "between sufficient organization to orient learners' actions and sufficient openness for expression of the varieties of experience, ability, and interest that are represented in any social grouping" (Davis, 2004, 169).

Representations of the Possible
While many beneficial educational uses of computers were documented in their *Critical Fictions* texts, the teacher candidates concurrently described some of the unintended influences of computers in perpetuating social inequities and marginalization within classroom settings, including, as mentioned above, labeling, inadequate access to equipment, and cultural imperialism. The second strand of the *Layered Texts* assignment, *Representations of the Possible*, required the teacher candidates to reread and rewrite their *Critical Fictions*, this time to think of ways they could make positive interventions to classroom inequities that they had identified in the first part of the assignment.

Instructions for the assignment were to "revisit, reinterpret, and reinvent your *Critical Fictions*" and to write "a narrative that locates you in the play of classroom life, shares your imaginings of an otherwise to inequitable actions, and articulates your role in the transformation of classroom practices." More specifically, in their *Representations of the Possible,* teacher candidates were asked to consider questions such as: "In what ways will you encourage your students to think critically about how they use computing technologies?" "What might you have done to transform the remembered events (i.e., the incident described in your *Critical Fictions*)?" "Would you have been willing to do it?" As part of the process of writing their *Representations of the Possible,* the teacher candidates were expected to draw upon the readings assigned for the entire *Mediating Technologies Module.*

The assignment was structured to make clear to the teacher candidates their own centrality in data interpretation and reporting, and to have them think through how they might teach to transform limiting classroom practices. Teacher candidates were asked to work with the "story" of the critical incident they had documented in their *Critical Fictions* and (1) to imagine what they could—and would be willing to— do to make a difference in the event they related, and (2) to connect this imagined action to their own lives and beliefs. I asked my students to invent, and to write themselves into, an alternative story of classroom life. Thus, the teacher candidates' *Critical Fictions* became the starting point for (1) their reconsideration of the social and political contexts in which their teaching and learning are situated, (2) the types of computer-mediated activities teachers and students engage in, (3) and some of the culturally mediating characteristics of computers in their classrooms and schools.

When I asked the teacher candidates about their experiences working on their *Representations of the Possible,* one responded by considering the scope of reflection she experienced:

> When we represented the possible, all of us had to think of something that we could do to make a difference. It was asking you to take a little piece of yourself—almost outside of the assignment—and make it your own. Own it. When people are revealing part of themselves, that is when you are breaking down the barriers, and maybe that is what we're talking about—pointing things out and breaking down barriers.

Another remarked:

> It was a process. I am going to take that process and try and incorporate it in my

teaching. I think the method you taught us is something that is sort of embedded in our brain now, especially now having completed the assignment. How we layered everything was good because we're seeing our growth. You're seeing from the first step: what you saw as the inequities. Writing our *Representations of the Possible* brought it right up to: How are we going to teach against the inequities we saw? How are we going to handle them as teachers? What are we going to do to make a difference? How are we going to change things? The assignment was a whole process. It was a process and a method.

In their *Representations of the Possible*, the teacher candidates, each in their own way, called upon educators to be attentive to how classroom and school cultures relate to and are mediated by the presence and use of computers. They called upon educators to consider how dominant streams of thought (e.g., the importance of individualism), popular beliefs about teachers (e.g., "everything depends on the teacher") and forms of cultural encroachment (e.g. spell check) can frame classroom practices, constrain students' learning opportunities, and limit what is possible to be thought. Each essay highlighted different ways computers and computer-mediated activities can shape the everyday functioning of classroom life in unintended—and sometimes negative—ways. Significantly, as well, the *Representations of the Possible* suggested ways educators might make positive interventions.

The Collection of Texts
Throughout the *Mediating Technologies Module*, teacher candidates were encouraged to collaborate with each other in sharing both their observations and experiences in their classrooms and their writings about what they saw. To further highlight the communal aspects of the project, the final component of the *Layered Texts* assignment involved the bound compilation of all the *Representations of the Possible.* Maxine Greene (2000: 274) has written:

> To educate for the mode of associated living that is called community, teachers must think about what is involved in inventing the kinds of situations where individuals come together in such a way that each one feels a responsibility for naming the humane and the desirable.

I included the following thoughts about the *Layered Texts* assignment in the handout describing the activity to the teacher candidates:

> bell hooks has remarked "we often have no concrete examples of individuals who actually occupy different locations within structures, sharing ideas with one another, mapping out terrains of commonality, connection and shared concern with teaching practices" (1994: 129-30). I agree. Consequently, I will compile your *Representations of the Possible* and each of you will receive the collection of stories of possibility, written by your colleagues, which presents thinking and teaching practices that value human dignity. The collection of stories is not intended to serve as a "blueprint" for social equity. To treat the compilation as such, bell hooks explains, "would undermine the insistence that engaged pedagogy recognize each classroom as different, that strategies must constantly be changed, invented, reconceptualized to address each new teaching experience" (1994: 10-11). Rather, the collected *Representations of the Possible*—your stories—are intended to serve as a beginning, as a point of departure, as a prompt for others and for yourself: a call for action.

Because each *Representation of the Possible* carried traces of the conditions that gave rise to it, each was unique to the circumstances in which it was created. That is to say, the form and content of these essays emerge from the participants' interpretive treatments of the events they chose to describe in their *Critical Fictions* and indeed, of their interpretation of the assignment itself.

The alternatives to existing educational practices that the participants imagined for the purpose of crafting their *Representations of the Possible* are similarly situated within a specific context. In the following passage, a teacher candidate speaks to how the sharing of their works of the imagination challenged her practices of interpretation as well as how she understood the stories her peers had shared with her and her own stories as well:

It was neat because even though we did the same assignment I remember being amazed at how many different perspectives came out of sharing our *Critical Fictions* and *Representations of the Possible*. Sharing our *Representations of the Possible* with each other also pointed out how many places we could do something different, if we did see.

When I asked the teacher candidates their thoughts about receiving the collection of *Representations of the Possible,* one mused:

It was very validating. It makes one feel like their words count. That my words count. When you see your words on paper, it is tangible. When you gave us the collection, it was as though our words really mattered.

Attentive to the concerns documented in the collection of stories, a different teacher candidate remarked:

I keep the book on my night table. I just love reading all the titles that people came up with. I have read many of the stories. The other day I got out the provincial curriculum documents and looked at them again and it says right there that we should be using computers. But the official curriculum documents do not address the stuff addressed in our collection.

While the teacher candidates followed along their own paths of inquiry and investigated events of interest to them, what emerged through the collection of their texts was a collective sense of communal responsibility. Cynthia Dillard (2000, 673) observes: "To know something is to have a living relationship with it, influencing and being influenced by it, responding and being responsible for it." A teacher candidate remarked: "Now we have each other's stories for when we teach in our classrooms. Really, we did this together and we have our stories that remind us that we are together." In a sense, then, this sharing of perspectives, ideas, insights, and understandings for a common purpose as well as the collective acts of envisioning how to teach towards social justice became grounds for community.

Although the teacher candidates were working on the same learning activity in the context of studying in the same Teacher Education Program, the diversity (of experience, opinion, mode of expression) was understood by the teacher candidates (and myself) as integral to the learning activity. In conversation, a teacher candidate reflected:

It was very interesting, too, because if you're going to work towards anything, it's very important to know how people are thinking and how people perceive things and why. And you can also learn so much from other peoples' perceptions, [people] who might know more than you, or you might be challenged by certain things they read or said. It just adds to the diversity of things and keeps it so that it is not a one way of looking at things.

The diversity of experiences and perspectives represented in the collection of *Representations of the Possible* serves to illustrate, from the different vantage points of each of the teacher candidate's individual contributions: (1) the social and political context in which teacher candidates will eventually be teaching, (2) perceived mediating characteristics of computers, along with examples of the computer-mediated activities teachers and students engage in their classrooms, and (3) an expanded range of perspectives and alternative practices that beginning teachers could consider in their future teaching. In sum, when considered as a whole, the *Representations of the Possible* collection highlights "the inevitable range of activity and interpretation that will arise when a roomful of diverse persons is invited to think about the same topic" (Davis, 2004: 96).

Conclusion

The work that emerged from the *Layered Texts* activities illustrates what I envision as "engaged

pedagogy." In the words of bell hooks (1994, 207):

> The classroom, with all its limitations, remains a location of possibility. In that field of possibility to labor for freedom, to demand of ourselves and our comrades, an openness of mind and heart that allows us to face reality even as we collectively imagine ways to move beyond boundaries, to transgress.

The *Mediating Technologies Module* provided a venue for the exploration of three interrelated themes: first, a consideration of how critical analysis can be promoted in relation to curriculum expectations involving computers; second, possible ways of broadening awareness of prevailing patterns of inequities within current practices of schooling; and third, imagining ways to transform perceived inequities into myriad opportunities.

The structure of the *Layered Texts* activities, coupled with the assigned readings, allowed teacher candidates to notice classroom events that, at first glance, might not have seemed significant, but when viewed from the perspective of broader social and cultural relationships, took on different meanings Their *Critical Fictions* highlighted some of the routine practices that limit children's opportunities in the present and close down future options; the teacher candidates' *Representations of the Possible* summoned up "visions of a better state of things" (Greene, 2000: 272). While the *Layered Texts* followed a prescribed order, new and unexpected avenues of understanding arose during the processes of engagement with their own texts and engagement with the diverse range of perspectives in the collection of *Representations of the Possible*.

Deliberations about the use of computers in the classroom often take the binary form of debate (Nardi & O'Day, 1999). I share the view of scholars who recommend that educators move beyond unhelpful pro-computer—anti-computer posturing and instead, orient their attention to the influences of computers to the qualities and ordering of teaching and learning experiences (Davis, Sumara, Luce Kapler, 2000). When collected together, the *Representations of the Possible* narratives brought to the fore a range of potentialities that transcended what was presented in any individual story, offering a range of ideas and strategies of what might be changed to engender more harmonious and equitable experiences of learning and classroom life.

In my current teaching, I elaborate on ideas from the *Layered Texts* activities of the *Mediating Technologies Module*. The learning activities I use are structured both to support teacher candidates' inquiries into the nature and processes of learning, and to expand their interpretive frameworks. It is my hope that those who engage in activities such as the *Layered Texts* are touched in a way that inspires a recognition of the importance of teaching towards social justice—and a realization of their own ability and capacity to do so.

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Endnotes

[1] See, for example, *Elementary Curriculum* [Internet]. Government of Ontario, Ministry of Education, 1998 [cited December 12 2007]. Available from www.edu.gov.on.ca/eng/curriculum/elementary/arts18curr.pdf.

[2] Notably, my phrasing "critical feminist sensibilities" makes reference to ways of thinking that place human dignity at the centre; while embedded within these sensibilities are established methodological approaches. The following thinkers and texts have informed my understanding of critical feminist thought: Hooks (1994); Luke & Gore, 1992; Smith, 2000.

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