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Secondary English Teachers' Responses to Evolving Information Technology

by

David Bruce Jorgensen 

A thesis submitted to the Faculty of Graduate Studies and Research
in partial fulfillment of the requirements for the degree of
Master of Education

Department of Secondary Education

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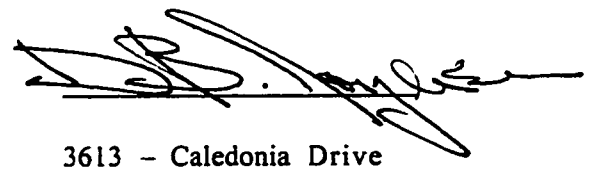

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ABSTRACT

Is our place in The Information Age not unlike the time between Gutenberg and Luther -- a time when European societies and their technologies were in great flux? Using this question as a starting point for discussion, the study chronicles how seven teachers -- while excited about the possibilities for online technology use in their classrooms -- are also worried about valuable parts of the non-electronic writing culture that may be left behind. During analysis, six issues presented themselves as important discussion points: Ownership of technology; citizenship; transition between a cursive and an electronic culture; reader response theory vs. technologically-driven writing practice; quality of electronic information; curricular constraints vs. technology integration; access to school-based information technology. The study provides a snapshot of seven teachers and their encounters with adolescent online technology at the beginning of the electronic millennium.

DEDICATION

To
Muriel Mary Margaret Gessleman,
one of the finest teachers
I have ever known.

Your wisdom,
your patience,
your kindness,
your art,
your unfailing good humour,
and your faithfulness
will never be forgotten.

Thank you.

The term is over: the holidays have begun.
The dream is ended: this is the morning.
- C.S. Lewis -

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Thanks to Black Gold Regional Schools for giving me the time I needed to complete this study. I hope that my work will in turn be of some benefit to you.

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For Miss Margaret Carmichael, who taught me to love words.

To my thesis advisor Dr. Margaret Mackey, whose gaze was always toward the finished product. Thanks so much for your attention to detail and your marvelous ability to bring earthly shape to my ethereal ramblings.

To Margaret and Peter Jorgensen, who read every page and were there every step of the way. I owe you more than I can possibly say.

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And finally, thanks to Shirley Jorgensen. Neither cousin nor sister, but most decidedly editor and friend. You have my everlasting love and gratitude.

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Chapter One

Pedagogy in Transition

Consider this page. Its margins are clean, neat, its words elegantly turned out. The eye flows effortlessly over the double-spaced commentary and italicized quotations. This document -- and hundred of thousands just like it that are generated these days by the occultic interplay of sub-grammatical routines built of 'ones' and 'zeros' -- are the stylistic pinnacle of more than two millennia of cursive aspiration. While this clean page cannot show the hundreds of drafts that the document went through or the multitudinous hours of thought and second-guess, those successive drafts were themselves easily produced, with word processors and supporting electronic communications equipment enabling one iteration to flow seamlessly into another.

Of course, it was not always thus. The rotary-ball IBM Selectric, an electric typewriter that graduate students employed just a generation ago to generate documents similar to this -- itself a marvel of its time -- was the antithesis of this ease of production; multiple drafts of documents such as this one were laborious and desperately hard-won. Indeed, it may not be overstating the case to say that the differences between the electronic writing processes I employed in comparison to a similar student of 1969 are as different as the writing processes employed by scribes and printers who worked respectively before and after Gutenberg.

That we are in the midst of a massive change in the way we

communicate is obvious; equally apparent is the fact that this development is having a huge effect on the way we teach the subtleties of communication to secondary English Language Arts students. Since the pace of technology is forcing such rapid change, however, it is impossible at this point to make any definitive pronouncements about the ultimate destination of our current technological journey. In fact, I sometimes to wonder whether we are truly going "where no one has gone before", or whether we're simply treading on the same road blazed at least as clearly by the likes of Gutenberg, Morse, Bell, Edison, and Marconi.

Reflecting the mutations that are taking place in so many other knowledge- and communications-based professions, English Language Arts teachers today are caught in a societal shift not only of expectations but of the fundamentals of their discipline. In order to underline the importance of the shift, though, perhaps it may be instructive to look back at the effect Gutenberg's printing technology had on the knowledge industries of the time. Indeed, Drucker takes the paradoxes of the age and quantifies them:

> This is very similar to what happened in the printing revolution -- the first of the technological revolutions that created the modern world. In the fifty years after 1455, when Gutenberg had perfected the printing press and movable type he had been working on for years, the printing revolution swept Europe and completely changed its economy and its psychology.... Some 7,000 titles were published in those first fifty years, in 35,000 editions. At least 6,700 of these were traditional titles. In other words, in its first fifty years printing made available -- and increasingly cheap -- traditional information and communication products. [1]

It is clear that with less than five per cent of published titles in the intervening time comprising new works, there was a period in which revolutionary technology was best employed to support the commonplace. This lasted for two generations, but in the end, the technology did beget revolution: Gutenberg's Bible, Luther's subsequent translation and publishing of the German New Testament in 1521, then Machiavelli's equally

[1] Drucker, p. 54

revolutionary political polemic in 1532 undoubtedly helped to shape the societies that came after.

There are many who suggest that we are in the midst of a similar electronic turnabout, that our societies are changing as a result of the kinds of communication that we can instantly indulge in. Murray advances this point clearly:

> In 1455, Gutenberg invented the printing press -- but not the book as we know it. Books printed before 1501 are called incunabula; the word is derived from the Latin for swaddling clothes and is used to indicate that these books are the work of a technology still in its infancy. It took fifty years of experimentation and more to establish page numbering and paragraphing; and title pages, prefaces, and chapter divisions which together made the published book a coherent means of communication. The garish video games and tangled web sites of the current digital environment are part of a similar period of technical evolution, part of a similar struggle for the conventions of coherent communication.[2]

With this perspective in mind, it may be instructive to consider the quandary of today's prototypical English Language Arts teacher:

Michelle Smith is a teacher in an affluent suburban Albertan high school. This semester, she teaches three eighty-minute classes with a total student load of ninety-one students. Her workload includes one International Baccalaureate grade twelve English class, one academic grade eleven class, and one non-academic grade ten class. She is in her late thirties, she's been teaching for sixteen years, and in that time she's seen four generations of computers come and go from her classroom. Her students were word processing with Apple IIe's when she started teaching, and after her third year her school switched to beige toaster-Macintoshes. After teaching for seven years, her division bought a succession of newer Macintosh LC's in various guises, and three years ago she was asked to abandon her Mac environment in favour of 166 mhz Windows-based Pentium I's. She has five Pentium I's in her classroom with another sixty upgraded Pentiums available

[2] Murray, p. 28

in two computer labs just four doors down from her room. In spite of the affluent nature of her community, just one-third of her students have computers at home, so she can't 'assign' computer homework as she can assign watching a television show, and some of her students complain that when they email work from her classroom to their home computers, the technology is not yet sufficiently transparent to assure receipt of a clean document at the other end. Michelle is also concerned that Alberta Learning's expectations for technological integration are increasingly falling to her English department to implement, and she's worried that other more traditional and cherished forms of English Language Arts may be falling by the wayside -- in fact she wonders about how to find time to teach a "canon" that now not only includes Toni Morrison and Aretha van Herke, but Gene Roddenberry and Steven Spielberg.

She has looked at 'Rocket Books' -- three hundred dollar electronic pocketbooks with titles available for fifteen dollars at the other end of a modem -- but she did not like the way they 'felt'. And at present, she's trying to convince her assistant principal to let her buy a DVD player for her English department, because she anticipates that the multi-track commentary that will inevitably accompany productions like Branagh's 'Hamlet', for example, will be of enormous benefit to her IB students.

Yet in spite of the obvious tensions arising from class size and piecemeal technological implementation, Michelle's teaching is punctuated with an underlying electronic excitement -- PowerPoint presentations, the ease of graphic integration into textual material, electronic voice recognition software -- all these present tremendous possibility for the future of her writing practices. She is, then, part technician, part poet, part hacker; perhaps even partly fearful. And she is representative of the profession that teaches a society on the cusp of a millennium.

While there is excitement on the part of the English Language Arts community and its evolving relationship with electronic online technology, there is an accompanying hesitancy too, for the pace of electronic change has created some huge differentials in the pedagogies and practices of contemporary English Language Arts teachers. Yet if the adaptation of previous electronic equipment provides some guide, there will be a leveling of skill and accompanying teacher practice as the technology matures; hence this research project cannot be anything but a snapshot of some current practices in the teaching of writing that have been influenced by this embryonic information technology. Because of the phenomenological and personalized nature of my research, I will inevitably deal with the shortcomings of these undeniably transitional technologies -- yet the corollary to that is also the realization that these incunabular technologies are making a profound difference not only in the way we write, but in the way we teach writing.

My study will detail and discuss, then, the experiences of seven secondary English Language Arts teachers in the Greater Edmonton area, and I will examine the effect that online information technology has had on their writing pedagogies and practices.

Rationale for the Study

There is virtually no argument over the idea that computers as word processors have radically enhanced the ability for English Language Arts teachers to assist students in the composing process. Students can now revise a rough draft any number of times with little or no worry, and they are justifiably proud of the 'look' of the documents they produce. As a consequence, the writing teachers may feel confident in demanding a higher standard of paper, both in terms of the quality of thought and detail, and in the

quality of organization and supporting mechanics.

Yet there is reason to pause and consider the process of electronic writing and rewriting, for there may be a concern in some students' writing, the documents they produce can look *too* good *too* soon. For some students, the on-screen editing process that they've adopted leaves no paper trail from first draft to final copy, and as a consequence, they are unable to *see* the changes that they have made. They are thus unaware of the alternate possibilities that a hard copy and an editing pen may have afforded them.

Does this mean that electronic composition may be inferior to its paper counterpart? Probably not, but it is important to realize that all modes of composition and rewriting have their respective strengths, and perhaps teachers of composition must now pay greater attention to the pedagogical choices that exist within the realms of electronic rewriting and editing.

One of the perplexing questions that teachers are left with is whether word processors have ultimately made students' writing any better. While some teachers have come to view the word processor as merely an extension of pen and paper, there are others who have come to feel that on-line word processors have created a different breed of writers -- and writing -- who are in turn fundamentally different than their Biro-and-foolscap predecessors. While the question may ultimately be moot, it is certainly true that word processors have changed the nature of student composition.

As online information technology brings new hardware and software to the writing classroom, there are many who feel that the pedagogy of secondary English Language Arts classrooms must change accordingly. Yet in this time of transition, the integration of old and new points of view can sometimes be troublesome, and it is important at this juncture to establish just what English Language Arts teachers' attitudes are to this mix of competing technologies.

Statement of the Problem

The research conducted in this case study focused on the teaching practices of seven secondary-level English Language Arts teachers in the Greater Edmonton area. Specifically, the fundamental question addressed was:

- **What strategies are secondary school English Language Arts teachers using to cope with the evolution in online communications technology?**

The operation of a secondary school English Language Arts classroom inevitably involves more than just decisions made by classroom teachers; consequently there is a supplemental question which was also addressed:

- **What technological issues remain unresolved or are not solvable at the classroom level?**

Delimitations and Limitations

The project was conducted under the following limitations:

- This study was restricted to seven secondary school teachers situated in the Greater Edmonton area.
- The study was limited to the time frame beginning September 20th, 1999, and ending November 4th, 1999.
- The small sample population greatly restricted the number of generalized observations on the state of information technology in English Language Arts classrooms.
- Because of the nature of the study, there may a difference between the interviewees' perception of events surrounding their classroom and what an independent observer might have seen.

I recognize that the study findings will be limited to the extent that the issues raised may be unique to these seven teachers and the schools in which they work.

Introduction to the Participants

They might best be described as troopers. These are all Edmonton-area teachers, and they are the people who work long hours, who take summer- and winter-session university classes, who took the time even fifteen years ago to find out the difference between an operating system and a systems operator. They're not roboticized cyber-teachers by any stretch of the imagination; they'll grouse and complain in the privacy of the staffroom about unruly kids or government cutbacks, but the depth of their involvement in their schools would indicate that they really are concerned with the welfare of their students.

Does this sound like a hometown cheerleader's pitch? Perhaps, but consider this: All have taken courses to upgrade their skills and teaching proficiency, and four of the the seven have Master's Degrees. 'Lifers' may have an ominous ring to it -- it somehow brings visions of Burt Lancaster and Alcatraz -- but not in this case. These seven people have committed their professional lives to the education and well-being of students; they have spent their lives working for the betterment of kids in Alberta's classrooms. Are these seven somehow typical of Alberta's English Language Arts teaching community? It would seem to me that I've met people like these in every school I've ever worked. Listen to their stories; perhaps you too have met people like these.

Yvonne Montagne.

Yvonne is a teacher with some widely varying experiences. A graduate of an Alberta university, Yvonne taught overseas under the auspices of the Canadian government before settling down with her husband and family in the Edmonton area. She's an academic generalist, having started her Alberta career in small elementary and junior high schools.

Now she works at an alternative school in the Edmonton area. She's a secondary humanities generalist, so she works mainly with Social Studies and English students. Her school caters to students whose lives don't reflect a lifestyle conducive to eight-to-four schooling, and she has been successful in starting a young-mom's support group within the school for those students who have to balance parenthood with academic initiative.

Her computer experience is typical of the group; she started using a Macintosh in the mid-eighties, and now uses a Pentium II for all her data processing, whether that be importing or exporting student data, writing, answering student email, or showing her students how to do topical online searches.

Allison Deutche.

Allison is an assistant principal and Language Arts teacher at an Edmonton area middle-school and is in the middle of her career. She has a Master's Degree in Education from an Alberta university and has spent most of her twenty-odd years in education as a counselor and a humanities generalist in Edmonton-area secondary schools.

Allison has often described herself as a Luddite, though her actions betray her self-description. She has timetabled her school's option program using a Macintosh-based spreadsheet for the past five years, and she's at ease working in both Macintosh and Windows environments. While she is not currently teaching core English Language Arts, her option load includes working with small groups in order to improve their writing abilities.

Sam Magee.

Sam is best described as a teacher by choice. His first degree is in Commerce from an Atlantic university, and it was only after working in the business world for a few years that he realized that what he really wanted to do was teach. He has a B.Ed from his alma mater and a Master's Degree in Education from an Alberta university, and has been teaching secondary English Language Arts for over fifteen years.

Sam is currently teaching grade nine Language Arts and is a firm believer in a process approach to writing; his students keep journals as a matter of course, and his room is set up as half classroom, half reading-room. Sam is best described as a technological power-user; as well as incorporating online technology into his daily grade nine classroom, he is also a computer technician and a programmer. Interestingly, however, Sam's objective is not to make his students similar power-users; he has stated many times that his goal is to teach students to be literate and to be writers -- and he is not averse to using both traditional and modern technologies in order to achieve those ends. Sam works his students hard -- *driven pragmatism* may be the best way to describe his teaching style.

Rita Riviere.

Rita is a grade eight middle school Language Arts teacher with some thirty years experience. Her classroom style could be described as 'motherly', for she alternately coddles and cajoles -- when walking past her open classroom door, one mostly hears laughter and the low buzz of kids at work.

Yet Rita is deeply concerned about the integration of online technology; two summers ago she embarked on a personal project to learn PowerPoint, and in the process, ended up teaching the rest of her staff how to use it. She is insistent that her students be technologically literate, and though in her

writing classes rough drafts come in all shapes and sizes, all final copies of assignments must be computer-generated. This insistence has led her into some interesting discussions with parents who don't have access to home computers, but she has stuck to her guns and has made a point of staying long after school is over in order for students to use word processors in order to finish assignments.

Duffy Barons.

Duffy is in his late forties, teaches high school English at an Edmonton area high school, and has led a colorful life. He started teaching high school English in the early seventies in a rural Alberta community, then went on a teacher exchange to England. The exchange was so successful that a year after coming back to Alberta, he went back to his English school and spent several years there. Duffy has also been a museum curator, a professional musician (which, he says, means that he starved while his band toured), and an actor.

Duffy came late to computers, and it is only in the last few years that he has really made himself acquainted with technology. Now he is a firm believer in word processors as central to the writing process, yet he has some concerns about the access that students currently have to the technology.

Erin Meyers.

Erin is an assistant principal at a large Edmonton area high school. She has a B.Ed and an M.Ed from an Alberta university and has been teaching for over twenty-five years. She has spent most of her teaching career in an English classroom and as part of the school's counseling staff, and came to administration some five or six years ago.

Yet Erin still maintains a solid link with the English Language Arts curriculum, and though her administrative duties no longer allow her the

preparation and marking time to teach academic English, she works yearly with the English 16/26/36 programs. For those students, she says, word processors are a boon as they allow these students the chance to organize their writing in a way that has never previously been successful. Yet her anger is palpable when she describes the money that has been spent on technology at the expense of hiring teaching staff, and she has concerns about the technological-replacement treadmill that schools have been on for the past fifteen years.

Cam Engel.

Cam is a teacher is his late thirties and teaches everything from grade nine Language Arts to Advanced Placement English 30 at an Edmonton-area Comprehensive High School. Cam has never taught in a classroom where he didn't have computer access -- indeed even in the first years of his career in the early eighties, his rural central Alberta school had a lab of Apple IIe's.

Cam is an esthete; he loves the feel of certain kinds of pens, he takes delight in describing the flow of ink on the page. Yet Cam is also a dedicated Macintosh man and has some grave doubts as his school replaces their Power Macs with Windows machines; he is concerned about the economy of the move as well as for the durability of the Windows platforms. His strong opinions betray his encylopaedic knowledge of the Mac world, and Cam and his colleagues have spent the last couple of years developing online-search and representative curricula that will best dovetail into Alberta Education's coming *Technological Outcomes* curriculum.

Cam is regularly communicating with his students in an online fashion -- his current problem is how to mark and format assignments that have been downloaded to him from students using another word processing package -- and this problem is illustrative of Cam's commitment to the technological

process. Yet he continues to wrestle with the ideas of 'deep writing' and 'deep reading' and how those are related to the march of technology.

As you can see, this group runs from Neo-Luddite to technophile, so there is a wide variety of technological experience. Yet if they have traits that are in some way typical of Alberta's English Language Arts teaching community, perhaps the most striking commonality among them is the desire to try and adapt to change -- to be on the lookout for better ways to teach a subject that they have all come to love.

Chapter Two

Writing Teachers in a Digital Age

> *The technologies of literacy involve each of us; we must change our focus as rapidly as the technologies of literacy themselves change. Anything less will shortchange our children, denying them important opportunities during their journies through life. Change happens in the technologies of literacy; change must also happen* throughout *the literacy education community.*
>
> *Consider this situation: This rate at which the Internet is appearing in school classrooms in many countries far exceeds the rate at which any other technology of literacy has ever appeared in our history. The Internet is entering classrooms at a faster rate than books, newspapers, magazines, movies, overhead projectors, televisions, or even telephones.*[3]

It is early on a Sunday morning. My family sleeps, yet in the past two hours I have been around the world several times. From my chair here in Edmonton's suburbs, I have answered an email from a friend in Los Angeles, read the highlights of today's *San Francisco Chronicle*, studied an online summary of CBC radio news, checked on the status of a book order from an online Canadian bookstore, searched North America for old sports car parts, and corresponded with some like-minded souls on a 'Computers, Writing, and Technology' listserver -- and all the while listening to Dvorak's *Symphony from the New World*, consuming a pot of Earl Grey, and munching on a peanut butter sandwich.

A century ago, Jules Verne made armchair travelers of us all, and this is

[3] Leu, p. 425

perhaps an appropriate place to begin tc think about vicarious experience. For I have not been dashing madly along the waterfront looking for a Pacific clipper with Passpartout tossing luggage in my wake; rather I have sailed the world on beams of electrons while Herbert von Karajan and the Berlin Philharmonic digitized Dvorak's dreams and brought them quietly into my study.

This room -- now part world-wide library, part concert hall, part theatre, part writing studio -- has been transformed in the past decade-and-a-half. Where it once was a room off to the side of the house with a desk, a wall of books, and an electric typewriter -- a quiet place to cogitate -- now it is often the center of household activity. From here, my children too conduct their own journeys around the world, watch Shakespearean theatre magically incarnated on a fifteen-inch screen, and hunt for keys in the creation of Social Studies essays due for next Tuesday.

To say that the way I write, or the way that my children write has been transformed by online technology is understating the situation considerably. For this desk is now not just a place for a few Bics, a stack of looseleaf, and Shakespeare's Folio; it is a place where our own journeys into new worlds are digitized, daily, personal experiences. This electronic desk has become a springboard into those worlds -- and it cannot help but change the way we script our lives.

Writing and the Electronic Community

Like my own children, many North American students now attending secondary school have never written without a word processor somewhere close at hand. For them, email, online searches, the multiple electronic revisions of an essay, and multimedia representation are second nature. A new writing culture has evolved in the space of half-a-generation, yet in

many respects our pedagogies of writing have not changed to reflect these new digital realities. While the jury may still be out as to whether these electronic changes are creating a revolution on par with Gutenberg's, it is imperative that in the next short while teachers begin to critique the pedagogy of the electronic writing process. Much of the change in information technology -- most of it, perhaps -- is good for the writing students in secondary school classrooms. However, English Language Arts teachers may be in danger of having accepted the electronic process in too cavalier a fashion, and may not yet realize the awesome research, writing, and editing tool that students have at their fingertips.

> In fact, according to a recent survey by the U.S. Department of Education, 84 percent of America's teacher's consider only one type of information technology absolutely 'essential' to their work -- a photocopier with an adequate paper supply.[4]

Leu is quick to point out that this may not just be the fault of the teachers; leadership in the implementation of support programs for the implementation of online technology may not be what it should be:

> A recent survey found that more than 80% or K-12 teachers in the U.S. did not feel well prepared to use technology in their classrooms (U.S. Department of Education, 1999). Undoubtedly, this is due to insufficient staff development since school districts in the U.S. spend, on average, only 20% of the recommended amount of their technology budget on staff development (CEO Forum, 1999; U.S. department of Education, 1996b).[5]

Conversely, it is important to ascertain whether teachers may have too quickly turned their backs the positive aspects of 'manual' writing and revision; are there some aspects of thought, revision, and community that are missing in an electronic approach to the teaching of English Language Arts? If there are, it may be instructive to review teachers' attitudes towards those and see what is important to retain in the various pedagogies of 'manual' writing.

---

[4] Anson, p. 264
[5] Leu, p. 427

The Nature of Electronic Community

> *As an agent for socialization and collaboration, the Networked computer has an even greater potential in education than does the stand-alone, knowledge-server type of computer. The active environment of social learning provided by a computer with access to local, national, and international networks increases interaction and communication among students, their teachers, peers, parents, and other members of the world community. Although there are some differences between distance education and classroom education, the significant issues concerning the use of computer networking and other emerging technologies to promote learning are both similar.*[6]

The online universe has led to a writing process that has become anything but solitary; students have developed a set of *linkages* to people who will give them immediate feedback, and as a result of email attachments and fax machines, students' editorial circles now have the potential to become geographically and numerically bigger.

One of the things this has done is to create a different role for North American English Language Arts teachers; no longer are they the only fonts of wisdom, they have instead become only one group in a much larger society on whom students can count on for education, advice, and editorial guidance. As the locus of some instruction changes from the classroom to cyberspace, then, many English Language Arts teachers may ask whether they need to change their classroom practices in order to accommodate this evolving online technology. There is an immediate tension that builds in a situation such as this, for it is important to realize that teaching still involves personal contact and personal response, and that the most successful teachers don't just teach English, they teach *students*. While this may seem trite, it is important to remember that as powerful as information technology has become,

> [t]he Web uses text, graphics, *interactively*[italics added], and to a lesser extent video and audio.... these characteristics make the Web most useful when used to explore intellectual and verbal knowledge, and to a lesser extent, when exploring affective

[6] Berge and Collins, p.7

learning.[7]

There is, then, a crucial interpersonal dynamic that may not exist in cyberspace. Anson agrees:

> Although many studies and testimonials affirm the ways that Internet chat lines listservs, email, and other 'virtual spaces' can actually increase the social nature of communication, there is no doubt that the physical isolation of each individual from the others creates an entirely different order of interaction.[8]

An electronic community is undeniably important, but an electronic community that has its basis in personal interaction may be far more important.

Citizenship in a Virtual State; School in a Virtual Community

Where is the Life we have lost in Living?
Where is the wisdom we have lost in knowledge?
Where is the knowledge we have lost in information?
The Rock, Part I
-T.S. Eliot-

If roboticized mass production has brought us a new kind of industrial process, however, it is also on the verge of bringing us a new kind of society -- and along with that, new kinds of relationships that will be forged as a result of this new electronic polity. Yet whatever kinds of societies those new modes of discourse may create, we must be careful not to forget the several millennia of civic interaction that have helped to forge our western societies. With that history clearly in mind, Barber has listed the following as essential for a society to carry on a civil and democratic discourse:

commonality	deliberation	inclusiveness
provisionality	listening	learning
lateral communication	imagination	empowerment[9]

[7] McManus, p. 2
[8] Anson, p.12
[9] Barber, pp. 116 - 121

It is easy to see a connection between these attributes and the life, wisdom, and knowledge that T.S. Eliot holds up to us, and there can be no argument that all of these are desirable in any level of public schooling. But will information technology encourage or discourage these attributes -- not only in our schools, but in our societies? And how do they form a template through which we can discuss issues of information technology, schools, and the societies in which both exist? Civil discourse in what appears to many as an increasingly uncivil time is becoming one of the goals of schooling, yet technology by itself can do nothing to support teachers in this quest.

Commonality, deliberation, provisionality (to be adaptive, in common parlance), learning, lateral communication, and imagination are part of the hallmarks of both our western societies and the Net. But is there an inclusiveness, a culture of listening, or a general sense of societal empowerment on the Net? Is there an ethos of democracy that has been created around all of this new information technology? And what happens when the sometimes frontier culture of the net comes face-to-face with students in our schools? Oppenheimer has some reservations:

> The free nature of Internet information also means that students are confronted with chaos, and real dangers. "The net's beauty is that it's uncontrolled," Stephen Kerr, a professor at the College of Education at the University of Washington and the editor of *Technology in the Future of Schooling* (1996), told me. "It's information by anyone, for anyone. There's racist stuff, bigoted, hate-group stuff, filled with paranoia; bomb recipes; how to engage in various kinds of crimes, electronic and otherwise; scams and swindles. It's all there. It's all available." Older students may be sophisticated enough to separate the Net's good food from its poisons, but even the savvy can be misled. On almost any subject the net offers a plethora of seemingly sound 'research.' But under close inspection much of it proves to be ill informed, or just superficial. "That's the antithesis of what classroom kids should be exposed to," Kerr said.[10]

That there are new vistas for student research, new technologies to promote student learning is all laudable. Yet we must not be blind to the fact

[10] Oppenheimer, p. 12

that interface with certain portions of the World Wide Web will open students to information that is undeniably anti-democratic and contrary to the standards of acceptable inquiry and safety that we would consider concomitant with good educational practice. And while the discussion as to whether we can or should attempt to control aspects of our students' thought and electronic endeavour is a long and complex one, we must also realize that not all is sweetness and light in the electronic universe.

It would be naive to suggest that advances in information technology have not brought about many positives: Everything from electronic peer editing to email penpals around the world to PowerPoint presentations to the simple uploading of an essay to a teacher two thousand kilometres away are now at once wonderful and commonplace. But these cannot come to be taken as the only forms of education that are legitimate in these new societies. And we certainly cannot assume that all previous forms of instruction are now automatically outmoded.

On-Line Research

While sophisticated search engines such as Metacrawler or Yahoo present students with a myriad of possibilities in researching any topic, there are some drawbacks that need to be identified within the paradigm of electronic research. What happens to the quality of student research, for example, when a student comes up against 60 hits on a Metacrawler search using "Anne Frank AND Auschwitz" as key words. Some of those sights, obviously, are going to provide them with suitable information. Other links, however, may lead to things such as misinformation from white supremacists and will only serve to confuse students, particularly when their Internet search time is boundaried by a fifty-four minute Junior High School Language Arts class. Many teaching aides have lately been put into place in order to

help both teacher and student through the mass of information that will inevitably come their way, and many of these come in the form of more refined search technologies. Much of the evolution in teacher practice, however, may also have to do with the evolving sets of expectations teachers have as they launch their students into cyberspace on informational search-and-gather missions.

Electronic Revision

> *Take writing, where by all accounts and by my own observations the computer does encourage practice -- changes are easier to make on a keyboard than with an eraser, and the lettering looks better. Diligent students use these conveniences to improve their writing, but the less committed frequently get seduced by electronic opportunities to make a school paper look snazzy. (The easy 'cut and paste' function in today's word-processing programs, for example, is apparently encouraging many students to cobble together research materials without thinking them through.)*[11]

Consider a symphony; Beethoven's Ninth, for example. The second movement, the *Molto Vivace*, starts with strings inscribing a driving scherzo that is then echoed by the woodwinds. Finally the brass answer in counterpoint, and with timpani punctuating the musical paragraph the whole theme begins again, changing from minor to major and back again. The time changes, but the contrapuntal nature of the movement does not; the driving, incessant beauty of the melody remains the same, refusing to be silenced. Then before the audience's very ears, the *Vivace* shifts to a lyrical and magical *Adagio* and we are left wondering how such a shift in tone and temperament can be performed so fluidly.

So is it with the best literature. An author threads an idea, overlayers it with metaphor, adds the counterpoint of argument and internal tension, punctuates it with contrast and conflict, and we wonder at the apparent ease with which a writer can reflect our humanity. Yet Beethoven took eleven

[11] Oppenheimer, p. 7

years to write the Ninth Symphony and what is amazing is not that he wrote it, but that none of the certain agony that accompanied the writing of the symphony shows anywhere within that hour of light. One wonders at what fragment started that musical quest, at the seemingly infinite rewriting process that must have occupied his dreams in the small hours of the morning.

It would seem that rewriting is one of the keys to success; but for students and their inexperience with the craft, rewriting is often a very arduous task. Even a basic word-processing package can assist students in creating successive drafts with a minimum of trauma and in that sense, Oppenheimer is only partially right, for his 'cobbling together' can also be a drive toward fluency. While 'cut-and-paste' will provide an easy avenue for the less committed, it will also provide the impetus for a drive for perfection among those so inclined.

What makes for good rewriting though? While writing is often a solitary process, the most effective editing can never be. Anson supports this approach:

> Next to classrooms with rich face-to-face social interaction -- fueled by active learning, busy with small groups, energized by writers reading each other's work, powered by the forces of revision and response -- independent study in writing appears misguided.[12]

Editing and rewriting have an inarguable social context to them, and that richness of that can be conveyed either digitally or face-to-face. Yet we should not be beguiled by electronic seamlessness, for we must remember that our students still need the abundance of informal talk and trusted feedback in order to be successful in their rewriting.

As an outgrowth of the combination of conversation and technological fluidity, any literary creation can continue to be a work-in-progress for much longer, for the creative process is no longer stifled by the typing and retyping

[12] Anson, p. 13

of seemingly finished manuscripts. Consequently the ongoing conversation that surrounds the editing of a manuscript is now automatically less threatening, for even major revisions of an electronically-stored document do not demand that a writer to begin anew each time.

Representation as the New Narrative

> *The question of value aside, another content characteristic that differentiates online and (in real life) IRL writing is that of linearity. Traditional print is linear in nature, while hypertext is non-linear. Good writing in cyberspace must recognize and incorporate this non-linearity. As Dr. Stephanie Gibson, editor of the online journal* 'Media Ecology' *points out, online writers' use of large chunks of text defeats the purpose of cyberspace. Thus, good writing for cyberspace must integrate content and organizational factors.*[13]

Two of the latest money-making schemes in the computer world have been to offer workshops in web-page design and PowerPoint presentations. Never mind that anyone with access to an instruction manual can create a passable web page inside a half-a-day, people will pay good money to learn the tricks, to find the secrets. So too with PowerPoint; no longer is it good enough to bring in a flip chart to impress one's point of view on a client, there should be a soundtrack and some full-motion video to go with the spreadsheets and statistical analysis.

These creations are far removed from argumentative and personal essays, and we are witnessing the birth of a new literary form; ironically one of which many English teachers yet have little or no knowledge. Ferris tells us that hypertextual writing is non-linear, and web pages have developed their own vocabulary and culture -- an 'edginess' that is not seen in more traditional literature. As Ferris says, text is truncated, metaphors are visual, colors are arresting, and the seemingly infinite depth of the screen allows for what would appear to be endless combinations; this literary form may often

[13] Ferris, pp. 2-3

have more to do with MTV than it does with Shakespeare.

Yet Alberta Learning's *Technological Outcomes* initially called for English teachers to become familiar with the grammar of HTML, for this was to be the *lingua franca* of the new millennium and thus this must be passed on to our students. Teachers also know full well, though, that for some students, a quiet corner and a copy of Tolkien may serve as an introduction to a universe more profound than any digitized incarnation. Ironically, the digital world continues to shift paradigms quickly, and HTML has evolved into JAVA. Consequently teachers need to ask themselves how best to create flexibility within their programming, for, given the current pace of electronic evolution, their students need to be able to respond to a wide variety of possible digital futures -- even while teachers teach fluency in the current electronic vernacular. The question is not whether teachers should have to teach HTML or its descendants -- Bill Gates and his predecessors set teachers on that path over two decades ago -- what teachers need to ask is with what passion do they dwell on current digital theory, and how do they apportion their time in relation to more traditional literary pedagogies.

Composition, Cognition, and Electronic Media

> *From that beginning, Tanya's only activity with the computer was writing. More letters poured forth, and then stories about relatives, about people she had met, about classmates and teachers. Tanya wrote stories about classmates she had been afraid to speak to and the presentation of her letters became first acts of friendship.*[14]

Is the networked word processor only a tool, or is it the harbinger of a brave new world? If it is only a tool, then it is of minor significance, for human ascendancy in this world is demonstrated by a succession of tools we have adapted for our use. But what if the online computer is more than that;

[14] Turkle, p. 124

what if this screen and keyboard herald the arrival of a society that is as differentiated from 1950 as those societies we now see to be Pre- and Post-Gutenberg? If this is indeed the case, would it not be wise to see what kinds of *thinking* are taking place as our students sit in front of these seventeen-inch rectangular marvels? While we all know that we interpret the world in individual ways, perhaps teachers need to take some time to see how electronic interaction is affecting their students. Witness the following debate:

> Others believe they have seen computer games expand children's imaginations. High tech children 'think differently from the rest of us," William D. Winn, the director of the Learning Centre at the University of Washington's Human Interface Technology laboratory told *Business Week* in a recent cover story on the benefits of computer games. "They develop hypertext minds. They leap around. It's as though their cognitive strategies were parallel, not sequential." Healy argues the opposite. She and other psychologists think that the computer screen flattens information into narrow, sequential data. This kind of material, they believe, exercises mostly one half the brain - the left hemisphere, where primarily sequential thinking occurs. The 'right brain' meanwhile gets short shrift -- yet this is the hemisphere that works on different kinds of information simultaneously. It shapes our multi-faceted impressions, and serves as the engine of creative analysis.[15]

On the one hand, Turkle tells of the wonderful change that word processing brought about in young Tanya's life, yet Oppenheimer discusses the possibility that students' right-brain thinking may be impaired as a result of continued electronic interaction. Certainly the diversity of opinion should give teachers cause for thought -- enough to sense that further research may be justified.

It may also be instructive to look back and reexamine the changes that the printing press brought to education. That memorization and recitation disappeared as educational imperatives as a result of the perfection of printing technology is irrefutable; perhaps there are disciplines within our current English Language Arts culture that are about to similarly disappear. If so,

[15] Oppenheimer, p. 10

teachers might wish to to ask what vestiges should be saved and imbued with some significance. Within this shifting electronic universe, here may be the most important part of the discussion, yet in many respects, also the most ephemeral. For, as our Stratfordian friend once observed, man is a giddy thing, and to quantify that giddiness has always presented a huge -- and in many cases insurmountable -- obstacle. Nevertheless, it may be crucial for teachers to inquire what changes computer-assisted pedagogy are bringing about in the cognitive processes of their students.

Alberta Learning's Expectations for Use of Information Technology

In June of 2000, Alberta Learning will introduce a provincial *Program of Studies for Information and Communication Technology.* It will not be a stand-alone curriculum; rather, it will be designed as "a curriculum embedded within other curricula."[16] Additionally, one of the underlying principles of the document is that "The technology outcomes in this curriculum are limited to basic constructs relating to *information* and *communication* technologies."[17] Since both the processing of information and communication itself are central to the mandate of the teaching of English Language Arts, Alberta's English Language Arts teachers should take the time to become aware of the various outcomes designed into the *Interim Program of Studies.* For while the thrust of the curriculum seems to be largely positive, there are some questions that arise when contemplating its implementation.

[16] *Interim Program of Studies,* p. 3
[17] ibid, p. 4

Writing Classrooms and the Nature of Educational Change.

Change is often not conceived of as being multidimensional.[18]

There is an adage that school administrators sometimes give to teachers who are being transferred to schools that are somehow less desirable: *If you don't like what's going on, just close your classroom door.* For better or worse, this advice will not work when discussing the introduction of information technology -- for it is likely that over the next half-generation, the use of information technology in Alberta's classrooms is going to substantially change the way we interact with our developing student writers. To this end, Alberta Learning has developed an additional document entitled *Preparing to Implement Learner Outcomes in Technology: Best Practices for Alberta School Jurisdictions.* In its introduction to the document, the writers give some credence to the nature of educational change and refer to the following five attributes of successful change:

- teachers need time to master new practices and approaches;
- teachers need ongoing support and assistance -- not only from their colleagues, but from those in positions of power;
- teachers need to work in an atmosphere where risk-taking -- and all of its associated consequences -- is acceptable;
- all stakeholders -- not just teachers -- need to realize that change is not orderly;
- in working with any new task or set of ideas, teachers will require practice and feedback.[19]

As with the implementation of any new educational paradigm, it is important to remember that patience is always advised. While there have been many teachers who have zealously adopted everything from electronic peer editing to on-line penpals and made these strategies and technologies their own, it is important to realize that there are other teachers -- teachers who are equally effective in working with students in other areas -- who are more

[18] Fullan, p. 29
[19] *Learner Outcomes*, p. 3.

cautious in their electronic pedagogy. Technologically adept educators must be careful not to disparage those colleagues -- people for whom there still may be some very legitimate reasons for not joining the electronic revolution. If the use of electronic information technology is going to be successful within Alberta's classrooms, we must remember that from a teacher's point of view, an invitation to a party will always be more successful than a conscription notice from the local draft board. And we must also realize that change is far-reaching -- even the placement of an Internet node in a classroom, for example, is going to affect our students in ways we have not yet imagined. It will be crucial for both Alberta Learning and accompanying jurisdictions to realize that change of this magnitude will require a great deal of thought, discussion, and time; practicalities such as giving teachers an abundance of inservice time will be crucial to the success of the implementation of this *Program of Studies.*

The Positive Aspects of the *Program of Studies.*

Writing teachers generally have little to worry about when it comes to dovetailing their existing writing pedagogies into the the new *Information and Technology* Outcomes. Indeed, the outcomes seem to have been carefully crafted to support the *Western Canadian Protocols in English Language Arts.* Specifically, the outcomes for the composition, revision and editing of text are couched in the following language:

Division 3, General Outcome P1:

- 3.1 design a document using style sheets and with attention to page layout, that incorporates advanced word processing techniques, including headers, footers, margins, columns, table of contents, bibliography, and index
- 3.2 use advanced menu features within a word processor to accomplish a task; for example, insert a table, graph or text from another document
- 3.3 revise text documents based on feedback from others
- 3.4 use appropriate communication technology to elicit feedback

from others[20]

Additionally, there is the recognition that writing and representation have a broader meaning than just working with text:

Division 3, General Outcome P3:

- 3.1 create multimedia presentations that take into account audiences of diverse size, age, gender, ethnicity, and geographic location
- 3.2 create multimedia presentations that incorporate meaningful graphics, audio, video, and text gathered from remote sources.[21]

Division 4, General Outcome P5:

- 4.1 create multiple-link documents appropriate to the content of a particular topic
- 4.2 post multiple-link pages on the World Wide Web or on a local or wide-area network[22]

It is important to remember that the teaching of English Language Arts now goes far beyond reading and writing -- indeed, far beyond even speaking, listening, and viewing. Explicit in the document is the expectation that communication will also include the representative aspects of electronic on-line exchange. Indeed, the use of multimedia programs like PowerPoint or Hyperstudio are designed into Alberta Learning's sample lessons plans. At the grade eleven level, for example, Alberta Learning suggests that students:

> use appropriate technologies, e.g., computer software, scanners, audio or video equipment, to blend text, images, music and sounds in an original presentation that conveys the poetic elements in an effective multimedia form.[23]

Alberta Learning also emphasizes the interdisciplinary nature of the technology. In its *Illustrative Examples for Grade Eight*, for example, a sample Social Studies lesson counsels students to:

> Organize your research information. Include images, illustrations, or audio or video clips of the event or individual involved. In a multimedia format, e.g., slide show, multimedia software,

[20] *Interim Program of Studies*, p. 17
[21] ibid, p. 19
[22] ibid, p. 21
[23] *Illustrative Examples*, Grade 10 to Grade 12, p. 11

Hyperstudio, video or audio presentation, present the information to your class or to another class.[24]

The expectation is clearly that all subject area teachers will share in the teaching of the technology, and that fact should provide some relief to English Language Arts specialists who have traditionally found themselves saddled with the expectation that the teaching of all communicative processes is solely their responsibility.

The interactive and collaborative aspects of working with the language are also discussed:

Division 3, General Outcome P6:

- 3.1 communicate with a targeted audience, within a controlled environment, by using communication technologies, such as e-mail and web browsers[25]

Division 3, General Outcome C5:

- 3.2 use networks to brainstorm, plan, and share ideas with group members[26]

Division 4, General Outcome C5:

- 4.1 use telecommunication to pose critical questions to experts
- 4.2 participate in a variety of electronic group formats[27]

That good writing and rewriting involves a community of writers is not news -- in fact, the documentation recognizes there can be an electronically accessible writing community in various locations in the rest of the world. This is a welcome and exciting prospect.

Additionally, the document does not just take on a blindly sycophantic role in the perpetration of technology; under the general expectation that students will begin to understand the role of technology as it applies to self, work, and society, there is ample room for discussion on the limits of information and associated technologies -- both in the classroom and in society:

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[24] *Illustrative Examples*, Grade 7 to Grade 9, p. 34
[25] *Interim Program of Studies*, p. 22
[26] ibid, p. 27
[27] ibid, p. 27

Division 4, General Outcome C3:

- 4.1 assess the authority, reliability, and validity of electronically accessed information
- 4.2 demonstrate discriminatory selection of electronically accessed information that is relevant to a particular topic[28]

Specifically, the *Illustrative Examples* ask a student to:

> Conduct a search on the Internet to study perspective and biases or different electronic news sources. Examine a current news event of international interest as it is portrayed in several electronic newspapers. Read from local, national and international perspectives and from newspapers with recognized biases or focuses. Identify and discuss the purpose and usefulness of the information sources relevant to the particular inquiry or research. Evaluate how perspectives and biases influence the choice of information sources of inquiry or research."[29]

The brave new world of electronic information technology is not a panacea for the ills of the universe, nor should it be introduced into our classrooms in such a fashion. In fact, the real strength of the technology will become apparent when students begin to discover its limitations. Thus, the introduction of an element of healthy skepticism about the electro-informational process will indeed be no bad thing.

The documentation touches on the basics of composition and revision, representation, the interactive and collaborative nature of the writing process, the need to be a critical reader, and the interdisciplinary nature of communication; there is nothing in these outcomes that run contrary to what English Language Arts teachers would consider to be good writing practice. The strength of this approach, of course, is that these indicate outcomes and that *process* is left to the teacher, and that bodes well.

Writing teachers should not be unduly worried at the introduction of this new *Program of Studies.* Upon examination of the outcomes, Alberta's writing teachers may rather find that they have already incorporated many of them into their classroom practices.

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[28] *Interim Program of Studies*, p. 25

[29] *Illustrative Examples*, Grade 10 to Grade 12, p. 28

Some Cautions Associated with the *Program of Studies.*

Implicit in all of the discussions associated with the documentation is the assumption that there is going to be enough money to underwrite the technological aspects of the paradigm. It may be instructive to examine one example of technology integration:

> for 400 students, multimedia lab [seven computers], word processing lab [thirty computers], two computers per classroom, printers throughout the school [Dr. Morris Gibson School][30]

If the school has a pupil/teacher ratio of approximately 20:1, then there are approximately 77 computers allocated for student use within the building for a pupil/computer ratio of 5.2:1 -- very close to Alberta Learning's unofficial 1996 goal of 5:1. Since the average computer platform currently has a net cost of approximately $1300 exclusive of software and technical support, the capital cost of the platforms is approximately $100,000. A school this size would also need to have approximately seven laser printers for a total cost of approximately $6500. If divisional technical support is factored in at approximately $5000 per year, this creates an initial start-up cost of $111,500 exclusive of any associated software or operational costs.

Alberta Learning has committed between $40 and $45 per student as Technology Integration Funding Program monies in each of the three budget years beginning in April of 1998[31]. For a school such as Dr. Morris Gibson School, however, even if they amortize their initial start-up costs over the same three year period (using the $40 figure), the Technology Integration Funding Program will only provide $48,000 -- or 43% of the associated primary costs.

To be fair, it is Alberta Learning's assertion that while

> it may be desirable to have a high-end, multimedia machine at every workstation... such a goal is neither realistic or necessary. Pentium processors are not required for word processing.

[30] *Learner Outcomes*, p. 15
[31] *Three Year Technology Integration Plan*, p. 30

> Multimedia machines can be clustered for projects that require students to access graphics, audio and/or video/multimedia on the Internet, etc.[32]

Yet the rub is that in these electronic outcomes, most of the expectations for secondary schools involve multimedia and online electronic multitasking at every juncture. The idea that a six-year-old Macintosh LCIII running at 25 mhz or a DOS 486 computer running Windows 3.1 at 60 mhz can be warehoused in a grade seven or eight classroom and used exclusively for word-processing or simple online searches may be ill-conceived; once these outcomes are a reality, both staff and students will expect these computers to be involved in 'heavy lifting' much the time, and to suggest otherwise will be to put both teachers and students at a huge disadvantage.

In addition to the cost of hardware, the nature of infrastructure support must also be closely examined. In a sample lesson plan, students are encouraged to

> Copy, import and/or download at least three pictures of art or one sound file that you believe are good examples of the kinds of messages the artist or musician is trying to communicate with us.[33]

The pedagogy associated with this exercise is sound; students will be demonstrating proficiency in online electronic data manipulation that will assist them in building their representational skills. Yet to have a number of students in a jurisdiction regularly indulging in such an activity is going to require a huge amount of bandwidth -- a problem that again can only be solved with a jurisdictional infusion of technology and capital. If online data access and manipulation is going to be both seamless and successful for Alberta's secondary school students, the electronic highways on which they travel must be rebuilt with many more lanes. For traffic jams -- whether on the Calgary Trail or on a virtual highway -- are a waste of time and ultimately

[32] *Learner Outcomes*, p. 22
[33] *Illustrative Examples*, Grade 7 to Grade 9, p. 21

counterproductive.

Irrespective of Alberta Learning's previous admonition, two fundamental expectations exist within the secondary school community:

- students' computer platforms need to keep up with prevailing technology;
- all students will have seamless access to a multimedia, online universe.

The Albertan business community's insistence that secondary school students be ready for the 'real world' speaks directly to these two expectations, and Alberta Learning's disclaimers notwithstanding, these expectations are implicit in all of the current documentation. And when these additional aspects of the technological revolution are factored into the budgetary equation, the accompanying financial shortfall becomes an issue that needs to be discussed in a larger forum.

The final issue that needs some kind of resolution is one involving the practicalities in timetabling these outcomes. For none of these outcomes will come to pass without some intrusion into both the time allocations and the traditional offerings of existing English Language Arts curricula. Consequently, a clear vision must be adopted as to what students, teachers, and the public-at-large will accept as curricular compromise: If a Junior High School Language Arts teacher is to become a 'keyboarding' teacher, for example, how will this impinge upon her existing curricular expectations for her students' reading programs? If this same teacher is also called upon to become responsible for PowerPoint education, how will this influence the systematic development of her students' writing portfolios? A teacher's time with students is finite, and the blithe assumption that these outcomes will take little extra time -- particularly in the implementation stage -- militates against the fundamentals of the change process of which Alberta Learning itself speaks.

Implications for Teacher Practice.

The instructional outcomes outlined in Alberta Learning's Information Technology documentation seem to be consistent with the curriculum framework outlined for English Language Arts Teachers in the *Western Canadian Protocols.* There is implicit in Alberta Learning's documentation the realization that change of this magnitude has to be assisted and that a secure educational ethos must be fostered in order for technological change to be successful. This assistance must come in the form of bureaucratic and financial largess -- recognition that time is needed for teachers to adopt these outcomes as their own. Implicit in the documentation there is also the assumption that the necessary monies will also be in place to support the technological underpinnings of the *Program of Studies.*

Given the provincial situation of continued financial retrenchment in all aspects of human service delivery, however, it may be instructive to examine the actual costs -- both capital and operational -- associated with the drive to computerize our schools. In light of those costs, and in light of the accompanying costs associated with the reallocation of time and resources within the existing curricular framework, we need to ask both the Alberta Government and the public-at-large whether they are really willing to fund such a massive -- and such an important -- evolution in curriculum.

The Relationship of the Study to the Literature

In Dvorak's *New World*, the second movement, the *Largo*, begins with a lonely clarinet playing the melody which we have come to know as "Goin' Home". Soon it is joined by other deep and flowing woodwinds. Maybe it is the musical incarnation of starlight we are listening to; perhaps it is the grandeur of Longfellow's forest that Dvorak was trying to bring to life. The motif is answered by strings, and then some compelling string basses in counterpoint. At the end of the movement, the flutes take us to a musical pinnacle while the string basses keep us grounded with a rhythm that will not be stopped. So it is with writing teachers today; there are many cautions associated with the dawn of the electronic millennium, and thus we must keep well grounded in what we have found to work well in our writing classrooms. The fact remains, however, that the heights are calling to us; word processors, modems, and Internet service providers are now as important to an English Language Arts classroom as a desk full of paper and roller-ball pens. As a consequence, teachers are having to adapt to a whole new teaching paradigm -- one in which there are still many ambiguities. Issues such as the nature of electronic community, practical boundaries for online research and representation, and electronic composition and cognition are of crucial importance to practicing teachers.

It is my intent to chronicle some teachers' attitudes to these issues so that a clearer picture of the state of the relationship between online technology and secondary English Language Arts classrooms will emerge. But as Dvorak as done for us, it is also my intent to show that the interplay between the old and the new -- between the earth and the heavens -- is complex.

Complex, and maybe more than a little magnificent.

Chapter Three

Research Design

In order to ensure that all data was analyzed with respect to the context in which it was created, I employed a naturalistic and qualitative mode of enquiry. I conducted semi-structured interviews in order to poll the behavior, beliefs, and intentions of a small group of secondary English Language Arts teachers in the Greater Edmonton area.

Methodology

Data Collection Techniques.

My data collection strategies included:

- in-depth, semi-structured interviews with seven secondary English Language Arts teachers and, where required, follow-up interviews;
- an analysis of relevant documents and correspondence.

In order to gain a first-hand look at the teachers' working environment and to promote conversation and a 'hands-on' approach to the discussion of the technology which may be in the classroom, I conducted the interviews wherever possible in the interviewee's classroom. Two standard-sized cassette tape recorders were used in order to carry out the interviews, as duplication of recording equipment ensured a reliable record of interviews.

Participant Selection.

Secondary teachers who were interviewed were chosen on the basis of the following criteria:

- their willingness to participate in the interviews;
- their involvement with online technology and English Language Arts teaching;
- their willingness to identify, reflect upon, and discuss these issues;
- an approximate balance between junior- and senior-secondary English Language Arts environments.

The group had a cross-section of experience with online technology, yet as I have shown in the respondents' biographies in Chapter One, all of the respondents all had at least some experience with computers and the English Language Arts classroom. This is important to note, because I do not know what percentage of Alberta's English Language Arts teaching community are technologically literate; consequently, I do not know how representative this group would be of the larger teaching community.

Interview Instrument.

These interviews were conducted between September and November of 1999. Although it was important to keep the structure of the interview open-ended in order to accommodate participant reflection and prioritization of issues, I developed seven questions in order to focus the participants' thoughts. The following questions formed the backbone of the interviews:

1] What is your personal experience with information technology; can you please describe both your personal and professional experience.

2] In your school, what do you see as the greatest strength of networked information technology? How do you take advantage of these strengths?

3] In your school what do you see as the greatest weakness of networked information technology? What actions have you taken in this area?

4] What are your thoughts about the transition from the 'manual' to the 'electronic' writing process? What might be enhanced through the transition? What might be lost?

5] In this time of transition, there may be students who are more familiar with online technology than you are. What strategies do you use in working with students who have greater technical capabilities than you do?

6] What else can you tell me about information technology and the teaching of English Language Arts?

7] Are there any elements regarding the implementation of information technology in your classroom that you feel are beyond your control?

These interviews were taped and later transcribed for analysis; complete interviews took from 60 - 90 minutes. After the transcription was complete, it was then reviewed by the interviewee to insure accuracy of information. After the participants had a chance to review the transcripts, I contacted them personally in order to discuss items that required clarification or further response. Yvonne, for example, was able to further chronicle her school's electronic interaction with an Ontario family en-route to an Alberta school, and Cam was able to shed from further light on his school's ongoing Macintosh/Windows debate.

Pilot Study.

In order to lay the groundwork for the rest of the study and to work out potential logistical problems, two pilot interviews were conducted during the third week in September of 1999. The two pilot interviewees did not differ from the chosen study group in any demographic respect -- that is, their relative geographic teaching location within the greater Edmonton area, teaching experience, and previous interaction with online information

technology was approximately the same as the five teachers in the sample group. Since the interview instrument and procedures worked as planned, no corrective steps needed to be taken taken in order to correct any particular situation -- hence the data garnered in the pilot was included for analysis.

Data Analysis.

In keeping with procedures described by Denscombe[34], interviews were tape-recorded with two machines and then transcribed with a jog-and-shuttle transcription tape deck. As per Denscombe's advice, I highlighted different topics with different colorings so as to make identification of relevant issues easier. I then read each transcript a number of times in order to become familiar with the data and at that point, common issues and topic areas emerged, both from topics provided by the participants and my own interpolation of the conversations. Finally, the following six categories presented themselves as topics for analysis:

- Conflicting Paradigms
- Platforms, Software, and Infrastructure
- Whole-Class, After-Hours, and Home Access
- Issues of Power and Control
- Shortcomings of Electronic Information Technology in the Classroom
- The Strength of the Paradigm

Using the multiple-color system I described above, I coded and sorted the interviews to reflect these issues. At this time, I also wrote to my online colleagues who subscribe to the NCTE 'Computers, Writing, and Technology' listserver in order to look for literature that would afford me some additional background in these topics.

[34] Denscombe, p. 131

Ethical Considerations

As is described by Denscombe[35], a situation may arise where the interviewee may not present an absolutely correct picture of events as they exist in his or her classroom. Wherever possible, then, independent documentation from classrooms and other relevant school communication was used to corroborate the interview data. However, since I was able to develop an excellent rapport with the participants, I am confident that the data is consistent with the participants' perceptions of their respective situations and opinions. Thus, data trustworthiness is maintained.

All of the potential participants were contacted both in person and in writing in order to obtain their permission to be interviewed. An introductory letter (included Appendix One) explained the purpose of the research and the guidelines which were used in order to ensure confidentiality. In instances where the nature of the information would make it difficult to insure confidentiality of the participant, he or she had the right to request that the information be removed. A copy of the interview transcript was provided to each participant.

[35] Denscombe, p. 132

Chapter Four

Conflicting Paradigms

The Clash of Cultures

A young pastor recently spoke to his congregation on the differences between adulthood and childhood. He talked wistfully about sometimes wanting to abandon his car keys, about wishing he could still believe that people were still nice and kind and generous. "But you know what I wish most?" he asked his congregation. "I don't want PowerPoint anymore, I just want my flannelgraph back."

Perhaps you remember the flannelgraph; it preceded Claymation, Sesame Street, even vinyl 45's. A board an armspan wide and half as high was covered in black felt, and other multi-colored felt objects -- and everything from letters to sheep and goats could be moved over the black background while the animator proceeded with a running commentary. It was simple, it was cheap, it was interactive. And in this young pastor's mind, it was effective enough not to have been automatically superseded by other technologically 'superior' equipment.

Similarly, all seven teachers in the study have indicated that they feel uncomfortable in a professional existence that sometimes places them between two cultures -- one culture that places a great deal of emphasis on such traditional skills as neat handwriting and proper spelling, and another culture that demands technological fluency in such things as online web searches and

representational programming. There are a multitude of factors driving this discomfort, but perhaps the most apparent is that online technology is not yet universal enough for secondary students to be similarly skilled when they enter any given classroom. Let us examine what Yvonne Montagne has to say:

> The students that I have contact with, because they're coming from a variety of backgrounds, there's a real inconsistent mastery of technology, from total terror to total competence and everything in between. It wouldn't be unlike a regular classroom, but in a classroom if you've got a kid, say for three years, somewhere along that line he's going to be exposed and coached and challenged to use the technology and eventually -- physically -- because he's in a classroom, he will be taught or coached or encouraged to use it. In our situation, the kid could, literally, go through the whole three years -- up until now of course when were constantly embedding technology in curriculum -- but up until now could go through the whole three years and not touch a computer, and be quite happy with that... When especially the English students enter a course, I always present them with the option of doing the entire course on the computer, including their notes, their final products, their exams. And of course, we designate students for computer use for the diploma exams, initially. The response is usually either absolute excitement and joy and relief, or shudder and horror -- with very little in between. They seem really strong by grade twelve; either they're on a path with the use of technology, or they've avoided it up until now. And, of course, eventually that will not be the case. But at this point, we're still in transition.[16]

It is clear that Yvonne sees a problem with students' inconsistent mastery of information technology. And when she encounters students exhibiting "either absolute excitement and joy and relief, or shudder and horror -- with very little in between", then it seems that the inconsistency of skills that her students are exhibiting are making it difficult for her to teach students with disparate technological capabilities.

Of course, this may be little different than any other kind of class where there are always students of varying capabilities, but she goes on to more fully explain the situation:

> The biggest frustration would be the lack of consistent background in our kids. We're still seeing transition kids. And

[16]Yvonne Montagne, pp. 4 - 6

> in Junior High when they come to us, they all have to take basic word processing -- so we're mandating, as of last year, that everybody has do this altogether in lock step. So we're catching the Junior High kids. The High School kids, as I said before, are still coming with big gaps -- huge gaps; partly because they've been out of school for a while. Some of them have avoided the whole technology thing altogether; they've been out and they've come back and they've avoided... So that spotty background is a challenge, and I think what probably will happen -- because we're trying to embed 'Tech Outcomes' in a course -- is that some kids will be there and other kids will take huge amounts of time to catch up. And that's always a question; is that a good use of your time? Do you have the time and the other thing do they have the interest? They may not see the value, or they may have been scared off right from day one -- and some of them are really violently opposed to touching a computer.[17]

Is it a good use of a teacher's time to have to bring students of varying technological expertise to a common standard? Of necessity, teachers have had to prioritize their time, and one of the underlying issues for Yvonne and the other respondents is whether the teaching of basic computer literacy skills even belongs in an English Language Arts Program. Yet the mere fact that the word 'literacy' is used when talking about electronic skills indicates that these representational skills have some passing value to the larger concept of literacy -- but in Yvonne's world, it is not that she can't see the value, it is rather that "they may not see the value, or they may have been scared off right from day one -- and some of them are really violently opposed to touching a computer."

It seems clear that in this transition from mostly cursive environment to a complex integration of cursive and electronic writing methodologies, students with varying technological capabilities -- all the way from near network administrator to Neo-Luddite -- cannot help but cause some dilemmas for teachers and students in their day-to-day interaction with information technology.

The corollary is also true; if these are indeed transitional times where

[17] Yvonne Montagne, p. 9

many teachers -- though they are 'good teachers' in the traditional sense -- have less facility with online technology than do their students, there is the apparent problem of teachers not feeling as capable in a subject area where they previously showed undeniable expertise. Allison corroborates the notion:

> So, beyond that, I use a spreadsheet, and I use a word processor. I've been trained on ClarisWorks, and ClarisWorks has become my buddy and my ally -- and with the Windows, I feel like I can muck my way around if I need to. But, no, I would not say that I'm very proficient on the computer. And often, my younger children put me to shame because they can certainly type -- well, not type, but they can certainly find things much faster than I can on a website.[38]

If any technological transition is inevitably marked by period of instability, one way to find stability in an English Language Arts classroom would be for teachers to be flexible. Given that in an online writing classroom the locus of educational authority may no longer solely rest with the classroom teacher, it would appear to be in teachers' best interests to use their own students to their best advantage, and to allow a model of cooperative learning to emerge.

What is problematic, however, is that the teacher cannot cavalierly allow authority to slip to technologies such as word processing packages, for traditional models of editing and proofreading don't necessarily work in an online environment. Because so many of the steps in the writing and drafting process are rushed, students may have a false sense of the integrity of a seemingly finished document. Allison goes on to explain:

> The second problem I see in moving from cursive to technology is that students figure that once it's typed it looks so great it's already perfect. So they don't bother editing. Spellcheck is only as good the actual sentence structure and the meaning of the word in the sentence. They assume that because they ran it through the spellcheck, it's perfect -- and so editing, once it's typed, is a very difficult thing; students don't think they have to proofread it. Because the computer checked it, and secondly, it looks good. But with handwriting, of course, you're crossing out words and letters, you know you have to redo it. As far as

[38] Allison Deutche, p. 1

> efficiency in teaching keyboarding skills -- it's wonderful for them to be able to take their thoughts and type direct. If they edit -- but very few of them do. Mind you, I'm dealing with younger students.[39]

Allison's own caveat is that she's working with Junior High School students who are likely immature in their editorial skills anyway, but it is worth asking what strategies can teachers adopt so that students can look beyond the seemingly finished elements of an electronic assignment to the more basic and structural elements.

The Virtues of a Papered Environment

And what of handwriting itself? Is there something innately positive in the culture of cursive writing that we are in danger of losing? Just as memorization is no longer a skill that is valued in the English Language Arts classroom, is cursive writing a skill that may also be on its way out of our English Language Arts classrooms? Perhaps it is important to clarify that the argument need not only concern the-write-and-scratch-out-and-draft-again process versus the electronic editing that many online writers suggest creates a fluidity to their on-screen writing. Rather the question is more fundamental: Is there value in continuing to learn the subtleties of simple written communication? Sam Magee delineates the concern:

> For myself, I will take anything handwritten or typed, it doesn't matter, no extra value for either. However, the limitation with handwriting in the learning process is that if a student makes a few mistakes in using a computer, it's very easy to change. In handwriting, the process becomes more arduous because you may have a two-stage essay which has five mistakes in it so you need a new copy -- they must rewrite the whole thing. So I think that using the computer technology for the learning process -- this is very good. But I don't think that we should get away from handwriting, not perfect handwriting, just that form of communication. And work on that as well.[40]

The debate is, of course, multi-faceted. Do we want to deny this ease of

[39] Allison Deutche, p. 3
[40] Sam Magee, p. 6

composition to students who may in fact benefit from an electronic streamlining of the creative, the communicative, and the editorial processes? The problem for the respondents is one of time -- is there enough time to cover both traditional and electronic curricula that now exist side-by-side? Sam again voices his concern:

> However, we're being squeezed out. I notice that this year, I have a new English Nine curriculum and with the new English Nine curriculum came a bundle of new information about the new technology that we must bring in on top of the new curriculum. And I don't have a problem, but I don't have the same amount of time to do the same amount of material. And I'm saying, well, what gets squeezed out? I'll tell you what gets squeezed out; literature. Literature, more creative writing gets squeezed out. I've dropped a drama section so that I can add more technology.[41]

The time given to any English Language Arts curriculum is necessarily finite, and the question becomes whether curriculum builders can keep putting additional technological expectations into the English Language Arts curriculum and still expect English Language Arts teachers to cover everything that they have traditionally covered. The representative strand, of course, can cover a gamut of things -- everything from film study to PowerPoint -- but is it worth dropping drama and creative writing in order to cover the additional curricular expectations?

Of course, if the curriculum is to be relevant it must represent not only the literature of the age, but the also its representational style. Just as the traditional literary canon is being added to with multi-ethnic and feminist perspectives, perhaps it is reasonable to expect that we must incorporate new and diverse methods for recording our impressions of ourselves and our cultures. While it may be true that English Language Arts is presently the catch-all for the electronic curriculum, it may still be the program that offers the greatest flexibility in dealing with the changing expectations of a technological age.

[41] ibid, p. 5

Platforms, Software, and Infrastructure

The Cost of Obsolescence.

> *The revenge effect of the explosion in computer performance is, as every excited new system buyer soon discovers, an implosion in value. In February 1994, a Compaq 486/66mhz machine with a list price of $4654 was projected to keep only 17 percent of its retail value over two years and only 6 percent after 3 years, 3 percent at wholesale.... Not only does resale value decline precipitously; the price of replacement systems actually goes down. There was a saying in the 1980's that "the system you want always costs $5000," and for all of the breakthroughs in the 1990's, this still seems to be the case for state-of-the-art machines, especially portables. A new entry-level system still costs around $1500, as it did in the days of the beloved Apple II, except that the product has many times the processor speed, memory, and storage capability. Of course cheap computers can still do a lot. But they can be the most expensive of all because they can become socially obsolete -- unable to run new releases of important software efficiently -- within a year if not in months.*[42]

Inside the inside back cover of the March 2000 issue of MacAddict is a full-color, full-page advertisement from *Newertechnology Inc.* The ad promises that if a consumer has just bought an old and now horribly outdated Macintosh 350 mhz G3 (perhaps less than a year old), www.newertech.com has the solution:

> *Well, Newer feels your pain -- and we have the remedy. You, too, can own a supercomputer without shelling out big bucks. Just plug in a MAXpowr G4-ZIF upgrade card from Newer and run dozens of AltiVec Velocity Engine-enabled software applications.*

It's clear that the race for bigger, better, slicker, and quicker is alive and well in the computer manufacturing industry -- and this cannot help but have an effect on the hardware that makes its way into schools. Antiquated computers -- like automobiles off warranty -- are expensive to maintain, and schools have had to add huge amounts of money to their operating budget lines in order to pay for technical assistance. And while there are those who will scoff at the notion of even a year-old computer being outdated, there is a metaphor that perhaps more clearly illustrates the problem: Last summer, I attended a

[42] Tenner, pp. 237-38

flea market where interspersed with black velvet paintings, Pokemon memorabilia, and tables of transistor radios was a large table of 'old' computers. The relic that particularly caught my eye was a complete system with the following black-felted description:

1986 Mac SE
40 meg hard drive
4 meg RAM
1200 baud modem
ImageWriter II with spare ribbon
lots of software
Works good!
$60 or best offer

This was of particular interest, as I bought exactly the same system in October of 1986 for just over $5000 (there's Tenner's magic number again) in Canadian dollars. Here is a flea-market machine with an operating speed of about 1/60th of today's high-end processors changing hands for approximately 1/100th of its initial retail offering.

Contrast this with my current mid-life-crisis-toy: A 1985 928 Porsche, its four-camshaft V8 has 288 hp and propels it to a top speed of 250 kph, and a good example will change hands for slightly less than 1/4 of its $72,000 1985 retail price. In contrast, a 1999 Porsche 911 is equipped with a four-camshaft horizontally opposed six-cylinder engine of 292 horsepower which will propel it to a top speed of 273 kph -- all of which can be had for approximately $110,000 Canadian dollars, or an adjusted price approximately equivalent to the 1985 price of my car. While there is clearly a difference in the maturity of the technologies used in the two models, in a road race, say, from Edmonton to Vancouver, the winner would be dependent on luck, traffic, and the sternness of the constabulary along the Coquahalla. In contrast, a 'race' between a 1986 12 mhz Macintosh SE and a newly-minted 450 mhz Macintosh G4 would be simply silly. The point is, of course, that automotive technology has matured to the point where changes are simply a matter of degree. Changes in

information processing technology, however, are still of such a magnitude so as to render a seemingly fully-functional computer essentially worthless. Cam articulates the frustration:

> To me, one of the key weaknesses is the basic economic question -- allocation of resources. Not just in terms of the fact that you've got X number of dollars and you're going to spend them this way. But the fact that with the high cost of technology it becomes in impossible in many cases for us to do some of the things that are expected of us, or we are capable of doing. I always get really frustrated with a lot of these business-types that get on the news where they turn around and say, "Well, schools aren't doing this, or schools should be doing this." Well, if we had their budget for technology, you'd be amazed at what schools could accomplish. And I think that they're being unrealistic when they're throwing away better equipment than we have. And that's not an exaggeration -- I have friends in private industry, and their companies give them old computers to take home that are better than some of the ones that we're running in our labs at school. But that's a given and a constant and with the whole nature of technology, it's not going to change -- you're never going to be able to maintain a current edge without an unrealistic allocation of resources.[43]

The problem becomes more complex, because as older computers are no longer serviceable, they are used as a source of cheap replacement parts:

> Of course we are retiring a lot of our old Macintoshes that have been around for many years -- when they go, we don't fix them, we're just retiring them for spare parts, because it's just not worth it. A lot of them are the old SE's, and to replace a drive on one of them, you're talking two or three hundred dollars -- it's not worth it. So they're getting cannibalized.[44]

Of course, there is still the problem of replacing the *number* of computers that have been lost to cannibalization, and, paradoxically, while the technology may still be adolescent and cranky, it has really become essential. Even in an application seemingly as 'low-tech' as word processing, sophisticated hardware is needed in order to keep up with ever-increasing teacher and student expectations:

> One thing that I think is of benefit... in the writing process is the professional looking product. I think that in terms of what can

[43] Cam Engel, p. 8
[44] Cam Engel, p. 5

> be done with word processing and publishing packages -- if you are able to do it. A lot of times when you're trying to put together an anthology, you're trying to publish a little book, or you're trying to do something, technological difficulties can intervene and cause major sources of frustration. Now part of this is an issue of the technology in the school -- we've done wonderful projects, but when it's come time for the actual production it's turned into nightmares because the printing capability or the processing capability of the computers in the school wasn't up to the volume of product that was generated.[45]

Duffy's problem mirrors Cam's:

> But one of the other problems that we've always had there is that we could get twenty people working on something and then they'd try to print everything and then suddenly it all goes kaflooey. It doesn't seem to be able to handle that kind of massive inputting in one class period. The next day we might get the printouts on it. There's all sorts of problems -- because they're only going in for maybe one or two or three class periods in a whole semester, you never really have the time to sit and think and say, "How do we do this?" Take the time to -- "I want you to set up a pattern on one assignment while you can use that for another assignment and another assignment and another assignment. But really, we're just kind of piecemeal at this point. And I understand it's money and we can't afford to buy other computers -- I understand that. But it just seems that we're way behind in this regard, and that's my opinion.[46]

Teachers seem to be saying that they're caught between their school jurisdictions' understandable demands for economy of platform and infrastructure, and other stakeholders' expectations that a higher standard of technological competence be built into the English Language Arts curriculum. Clearly, until there is either more money made available for the purchase of technology, or stakeholders take a more relaxed view of students' technological competencies, this tension will invariably continue.

[45] Cam Engel, p. 13
[46] Duffy Barons, p. 5

Reliability, Technology, and the Educational Jungle.

To complicate matters, (and in contrast to the primitive simplicity of a lead pencil and its only slightly more elegant cousin, the inked pen) electronic word processors do not work "first time, every time." In fact, information technology hardware generally continues to be subject to the vagaries of an absolutely constant power source, dependent on glitch-free programming, and covetous of a single-user environment. Simply put: In the multi-user jungle that exists in all schools, computers often break. Even if there is qualified technical assistance immediately available to repair a downed computer, there is a concomitant classroom management problem, as even a half-hour repair can delay a classroom assignment deadline a day or more. And in contrast to the industry-standard of approximately one technician for every 40 machines, many schools are serviced on a rotating basis by itinerant technicians. Witness Rita's plight:

> Well, some of the development and the newness and the development of some of the software - keeping pace with what's available -- that's a little frustrating. You just get something going and there is a, "Yeah, but if you got this one, it would..." And really what you're using is is just maybe meeting all your needs.
>
> But I really mean the technical, where you get the little bomb on the screen, and the whole system has shut down and you look at the calendar and it's not the traveling tech helper's day -- it's not Thursday and you go, "Oh oh." Mind you, this year, it's better than it has been. It's again evolving -- at least we have one day where we know -- sorry, half a day -- where we know there will be a computer guy in.[47]

Erin concurs:

> We have technicians who come in twice a week. And usually we know when they're coming, but sometimes we don't. But a school this size, and the number of computers we have -- we probably -- if we had the money -- we'd have a technician here working full time... ...The technicians are here today -- they walk in the door and 40 people jump on them and say, "Can you do this, this, and this?" And so that probably is another weakness -- just maintaining the equipment we already have.[48]

[47] Rita Riviere, p. 7
[48] Erin Meyers, p.4

The problem has been exacerbated by several well-meaning but ultimately frustrating federally- and provincially-sponsored programs where schools can access non-current computers at little or no cost while at the same time allowing business to dispose of obsolete hardware and pick up a tax break at the same time. Yet these second-hand computers are tired -- and as Tenner says, they are incapable of running the running the latest (and presumably the most effective) software. So while sitting at the back of the classroom these refurbished 100 mhz PowerMac's and DOS 486's may be presenting the illusion of technological dynamism, they may in fact be worse than nothing because their frailty may only create cynicism on the part of impatient students. Erin states the problem simply:

> And I have two in the back of my classroom too that I got from 'Computers for Schools'. But they tend to be older, and they break down every second time a kid uses them.[49]

And while The Cold War as been over for a decade, with the Berlin Wall but a memory and Brezhnev now a hero, detente has not yet completely taken place in the platform wars. While programs such as 'Virtual PC' will allow many Windows applications to run well on current high-end Macintoshes (with similar reciprocal applications available for current Pentium platforms), there is still suspicion that exists in both camps. Cam shows his biases:

> The school server is a Windows NT server which has been a bit of an issue and a source of frustration. There again, it was a decision that was made arbitrarily, and there's been several problems with it. And these are attributed to the fact that we're running dual platform. And that of course if we were strictly a PC school, we wouldn't have those problems. And my answer to that is if we were a strictly Macintosh school, we wouldn't have these problems either. But that's just a personal bias.... A PC environment -- although I do use them occasionally and I can start up a computer and I can run a program and I can create and use a document and things like that, I wouldn't consider myself comfortable at all with any of it. It's definitely a user rather than anyone who has any kind of degree of knowledge or expertise with the PC. But I think that's pretty common with most people --

[49] Erin Meyers, p. 3

> I'm much more inclined to mess around with my Macintosh because I'm much more confident with it, than I am in a PC environment. It just seems like there's way too many things that can go wrong.
> And an interesting thing -- since we've put a PC lab in, we have approximately one quarter the number of PC's in relation to Mac's yet our maintenance and repairs on the PC's are more than for all the Mac's put together.[50]

Now while this statement by itself may not be of great cause for alarm, the underlying passion of Cam's point of view is still common. And whether Cam's predispositions point to a real problem or to the triumph of a-decade-and-half worth of advertising, the problem is compounded by interprogram and interplatform translation problems that still defy transparency:

> One of the things that's really happened to us since there have been cutbacks is we don't have the opportunity to necessarily make big consistent purchases. It's been a real problem with us -- for example in standardization of word processing packages, standardization of email even. I allow my students to email me assignments and yet I was experiencing some real difficulty in terms of opening attachments and opening things and getting them to print. And then when you're looking at evaluating the assignment, you run into all sorts of formatting difficulties. And the techs came up with a solution -- it wasn't the solution I wanted, but it's one that works better than what I had before. But in terms of solving the solution, I'd say it's about a seventy percent solution in terms of achieving what I wanted to be able to have.[51]

And the problem is not just one of hardware, it is of finding the time to learn to use the hardware:

> Certain other things too -- when we've been able to secure some alternate funding -- we got a lottery grant, for example, so that we could purchase a Proxima for the school. Which is fine and dandy except we have 37.5 certificated staff and we have one Proxima. How do people learn to use it, get set up to use it, get the technological background to use it when there's only one of them? Consequently, it becomes the purview of the two or three teachers that are comfortable and familiar in using it. And even if you want to, it's not necessarily readily available for you to use -- and that's one of the things that relates to one of the major complaints that I have: And it's not just limited to schools, you find it in private industry too, and it's kind of a cliched phrase, but it's this tyranny of knowledge. By maintaining limited access

[50] Cam Engel, p. 5
[51] Cam Engel, p. 9

> to the knowledge that you need, it enables people who are in the know to parcel it out or ration it, or keep the demands for their time high, or to influence decisions, or influence the way that things are used.[52]

Of course, no technology is ever value-free, and perhaps it is also important that we examine the seemingly universal preconception that slicker technology and better hardware will automatically result in better pedagogy:

> Because what I'm finding is that one of the interesting things about independent learners is that the things I have assumed from classroom teaching will apply to independent learners; an example being if you're teaching Social Studies in a classroom, you want to supplement the discussion and books with videos. And I've always assumed that's a bonus -- that's an extra. Here's a pictorial representation of what we've been talking about. And what's always a surprise to me is that students don't necessarily consider that a bonus. In fact, some of them, when offered the use of video, for example, will say, "Please, no more video. I hate them. I fall asleep. Even if I'm at home, I fall asleep. Just give me the book and leave me alone." The same is true of information technology; just because I think a web site is cool and it's got multi-media, action, and so on doesn't necessarily mean that every kid will find it valuable. So the guess the challenge or the weakness is to have to monitor that -- to be able to check with the kid, and find out 'Does this work for you; does it enhance."[53]

Nowhere is the adolescence of the technology more evident than in a discussion of issues of reliability and interplatform transparency. While any competent Chevrolet owner can, with but a few minutes' familiarization, jump into a Toyota and drive away, the same still cannot be said for ease of use on competing computer platforms. Teachers and students need time to familiarize themselves in the switch to unfamiliar platforms, yet more technologically savvy staff members may be seen to be monopolizing certain technologies. Even protocols pertaining to the timely introduction of online technology still seem to be misunderstood by the respondents. Clearly these are still issues that need to be dealt with not only among students and staff members, but among those charged with the responsibility of developing technologically-

[52] Cam Engel, p. 8
[53] Yvonne Montagne, pp. 5-6

appropriate English Language Arts curricula.

Tech Envy and the Writing Process.

We may do well to remember that just because the technology presents us with the electronic and the interactive, it does not automatically mean that this will be best for every student. While we live in the midst of a society that caters to 'personal' needs with everything from personal watercraft to personal sound systems, it may be important to remember that access to personal computers does not immediately equate to personalized programming.

In the end, much of the frustration exists because the senior secondary teachers in particular feel that they and their students are still not using machines capable of full high speed Internet access or of fulfilling the representational portions of the Alberta curriculum; Cam's response perhaps best personifies the general sense of the respondents:

> The thing that I look at though is I think in terms of the way that we do spend resources sometimes. In my work situation it's an issue because we've moved to an area where it [used to be] more of a consensual style of decision-making to [now] a more top-down arbitrary decision. And part of it may be dictated -- I know that one of the issues, the installation of our PC lab was an issue that came through our parent council. The parents really, really wanted it, and the old principal had refused it where the new principal was willing to spend the money. And so they went ahead with it. Is there any great benefit? Right now, we're still looking at the cost of it. We've had to train people in other platforms, there's been a really high learning curve, there's been an expensive learning curve. And I don't think the benefits are necessarily there. I think that it was a decision that wasn't perhaps based on the same factors that I would base my decision.[54]

This concern that both students and staff are at least one step behind on the 'technological treadmill' -- always being out of synch with the capabilities that premium machinery could bring -- seems to have created at least a concern on the part of the interviewees. In part, at least, it seems to be based

[54] Cam Engel, p. 8

on the perception that there seems to be no real differential in student performance and teacher ease of use as a result of the introduction of 'better' technology. Curiously, however, this feeling is also combined with the resignation that currency in technology is necessary and expensive. Budgetary concerns are of course ongoing, particularly in these days of public service downsizing. Does, in fact, technology eat up a disproportional portion of operating capital? Sam has some rather pointed words with respect to this:

> My impression is that we're collecting more and more and more -- and we're not always using more and more and more. The fundamentals haven't changed in education -- I mean we can look at students and their marks in the last ten years, but we're not doing that -- most people never know what their students arrive knowing or what they didn't know. However, the promise of technology is still on the horizon. And, as a matter of fact, it was on the horizon ten years ago, and it was on the horizon ten years before that. So, somewhere along the road, we have to get access to some material -- good information that we can actually use for the benefit of the students. I'm afraid we're not there yet. I'm afraid that we pride ourselves in what we can do, but we're not doing it. We're spending millions of educational dollars on more computers, and I question whether we're getting the payback that we should be getting -- even now, in 1999.[55]

Certainly the respondents feel that their lives would be easier if there was some way to transfer some of the money earmarked for technological upgrading into personnel expenditure so that class sizes could be smaller. And while computer processors have increased in speed by a factor of at least 60 since the mid-1980's, it is reasonably safe to say that the processing speed of the human cerebellum has remained relatively constant during that same interval of time. Indeed, I am typing part of this document on a word processor that is essentially identical to the sixty dollar flea-market special just described, and for the simple task of turning words into their virtual incarnation, it works admirably well. Sadly, school budgets can buy our students faster word processors and platforms that will more completely integrate into an online universe, but they may no longer be able to afford

[55] Sam Magee, p. 1

them the time that is so necessary for reflective, effective writing.

The summer of 2000 will probably bring either a 700 megahertz Pentium III or Macintosh G4 "supercomputer" to my desk (ironically, at a cost still approximating Tenner's magic $5000 mark), but the cognitive processes associated with electronics and writing are likely to be the same: Scrawls on a yellow legal pad with a black rollerball, the seemingly endless trek through the intellectual desert until an oasis of cognizance is reached -- and then typing, cutting and pasting, thought, talk, then more typing. Perhaps next year's papers will all be done with voice-recognition software -- but the walks through the desert will still be on well-trodden paths. Yet the respondents' admonitions regarding quality, thought, and integrity will not change, no matter the speed or slickness of the processing chip -- for the real processor still works in front of the screen, not behind it. Duffy Barons summarizes it most succinctly:

> And of course there are lots of people that are online or that are working with computers -- there's a lot of accumulated knowledge amongst us. So in that sense, we've got tons of knowledge, we just don't have the equipment to make it work for us always.[56]

The fact remains, though, that our society seems to have a set of technological expectations that simply demand up-to-date online equipment in the schools. The interviewees have expressed a concern about keeping current not only because they have been admonished by Alberta Learning to do so, but because the outside world demands it. And regardless of the inherent usability of older platforms for simple tasks such as word processing, those societal expectations for electronic indicators of enhanced student capability in such areas as Internet access and representational facility are relentless.

[56] Duffy Barons, p. 6

Whole Class, After-Hours, and Home Access

> The biggest strength is that we have access to all of these things. The greatest weakness is that students don't have access to it. So personally as an English teacher, I would prefer to have my classroom full of computers. I think we could do the whole class on computers. The work would be better, there is a fascination about that technology that you could tie in to studying literature, you could look up things in depth. If we had access to it. So I use the computer every day -- every once in a while I can have a student working there or I can look something up for a student or those kinds of things. But there's limited access to computer technology, and so we have one computer in a classroom of thirty students, let's say. It's not very useful in that respect.[57]

The Cost of Access.

Let us take Duffy's aspirations and instantly create a secondary school where we wish to carry out his petition: If we were to install even five computers per classroom into a hypothetical 37-teacher composite high school, and if we installed low-end Pentium III's at a cost of $1300 per platform, the capital start-up costs would be $240,500 irrespective of any peripheral, operating, or associated personnel costs. If we are to use Tenner's rubric for these platforms, with their wholesale worth being amortized at 3% of purchase price at the end of three years, and assuming that a platform will have a useful social-programming life of three years and thus must be replaced, it would mean that the school would be recapitalizing five platforms per class just for Duffy and his fellow staff members' classrooms to the tune of $233,000 every three years. Put another way: if there are 760 students in Duffy's school, $102 per year would have to be taken from the per/pupil operating grant just to capitalize five new low-end computers per classroom every three years. And that does not include the acquisition, maintenance, or associated personnel costs of perhaps three other fully-equipped computer labs within the building. Of course, not every teacher in the whole school is going to need five computers per class, but given the fact that Alberta

[57] Duffy Barons, p. 3

Learning's only input is the approximately $40 per student discussed earlier, clearly the cost of technological currency and its accompanying accessibility is staggering.

Given the financial bottleneck that schools and their associated jurisdictions are facing, it is easy to understand the scheduling and allocative problems that the respondents voiced. Cam was most articulate:

> But there are certain periods in the day where the demand is such that it's almost impossible. If you have an English class in that period, it's very, very difficult to get kids in -- to get them computer lab time. And we've looked at this -- we have one lab that is designated for the Language Arts department or the English department, but on the other hand, it's used constantly. There are classes timetabled in it, large classes timetabled in it, and if you want to get the time you have to be able to switch. For example, in period two, we have eight sections of grade nine language arts taught in that period. There's four every day, on a day one/day two split, but computer lab time is a very difficult thing to get. Our district was for a while espousing the philosophy of dispersing the labs into individual classrooms, but I personally have a real problem with that. Just in terms of logistics and classroom management, I don't think that one or two computers in an individual classroom has much worth.[58]

Allison has a similar problem:

> In our school, the lab is used almost 100% of the time. And trying to get 400 students through a limited lab space is becoming quite a challenge. And, of course, the Language Arts/Social/Humanities crew really try to use the computers a lot -- for research and for typing of documents. But we also have students who need to learn keyboarding skills, so 'Mavis Beacon' is important for the younger students -- even for the older ones who have no keyboarding skills yet.
>
> So, it is a problem. Now when we've upgraded the lab, putting computers in the school classroom, maybe that will help somewhat. And some classroom teachers, now are saying that they're developing centres and they're going to have students rotate through different areas in their language arts which is positive. But timetabling is definitely a problem -- one lab, 400 students -- it has to be.[59]

Erin's composite high school has dealt with a similar problem by heavily investing in classroom-sized computer labs:

[58] Cam Engel, pp. 6-7
[59] Allison Deutche, p. 3

> We had three labs, and they were always used by the communication technology classes, the legal studies classes. And this year, for the first year, we have a lab that actually has computers that work -- we had another lab before, but the computers didn't work. It was just too frustrating to use. And now teachers can book into that lab. So the math teachers book in, the science teachers book in, and English, humanities, and social book in all the time. And it works really well.[60]

If Erin's school does in fact have the capability to put perhaps 90 students into three computer labs, that services perhaps 10% of her school population at any given time. Since it currently seems important to integrate varying curriculum with enhanced technological expectations, the question arises as to whether Erin's computer/student ratio creates enough exposure. Obviously, there is a resourcefulness that is called for in dealing with the lack of access time, and again Cam articulates the general flexibility of the respondents:

> Now we still have the legacy in this in that the teacher's desk computer does have Internet access, and there are times when yes you will use it, and students will use it. But in terms of utilization of technology on a class as a whole, it's almost a waste of time. If you're going to plan a lesson where you're going to allow kids or encourage kids to use technology, they have to have access to it. And that's a major issue. And some kids will use it -- like I have a couple of old [Macintosh] SE's that are sitting at the back of my classroom and some kids when they're doing assignments will use them. But it's not in any kind of a consistent or planned exercise. It's just that they see it there and they say, "Oh, can I type my stuff?" And I say, "Sure, go ahead -- that's what it's for."[61]

Lest one denigrate the notion that the social-programming life of a platform is an important issue, it may be wise to listen to Duffy's encounters with obsolete technology:

> What we've had up until this year -- there is a room we can now go. But it's a small room and it's with the worst computers in the school. You can book that and take your class in there. But I don't have a class that's small enough that would be able to access those computers. So I could have part of my class working on computers, but the other part has to continue the way we've

[60] Erin Meyers, p. 3
[61] Cam Engel, pp. 6-7

always done. Now -- there's limitations to that room - I don't think a lot of people actually do book that space. It is a step forward, but it's not a very huge step.

Other than that, all we've had is that teachers are teaching their classes, and there might be a few seats, and I say, "Well, if anybody would like to compose their story-," and there are some that say, "I can't write it, I gotta work on the computer." Students say that now to me. And I say, "Well, okay, you can go up to that room. If there's a space, and if the teacher's okay with that, then you can use that space." But that's it as far as access. That little computer room, I think -- I don't know, there might be twenty computers in that room. Not always working. We have access to the other room that has a good printer in it, but still, it's very limited in that respect. And then, of course, if you're doing anything beyond just simple word processing, it's a nightmare trying to get it done there.[62]

Consider Duffy's frustration when he tries to assign a computer-generated research essay with an on-line search component for 27 English 10 students when there are 20 computers in a lab that has only marginal Internet access -- his ire is indeed understandable. In contrast to Duffy's predicament, The Premier's Task Force on Educational Technology of 1996 established a benchmark of one computer for every five Alberta students as one of its goals. Perhaps for financial reasons similar to the ones stated above, there has since been a rethinking of this goal and rather a change in commitment to technological outcomes. Indeed as we have seen in the literature review, *Information and Communication Technology: An Interim Program of Studies* states clearly and simply the expectations for students in each of the three divisions. This is laudable in that it leaves educators free to find the process that best suits their particular students, but the fact remains that in the kind of situation that Duffy finds himself in, there are still simply not enough computers for student use.

[62] Duffy Barons, p. 5

After Hours.

There is, of course, the possibility of after-hours access to the labs; Allison explains why this is sometimes a problem:

> Access to the lab is really very limited. Now, granted, these students can be here after school, or at lunch time, but they need a supervisor, which comes to the second problem, supervision. You have to supervise: a] because you do not know where they're entering, or where they're going. And also you can't have the machinery abused, because maintenance is a nightmare. And we can't have downtime.[63]

If availability, technological currency, and ease of supervision are key criteria to consistent in-school student access to the technology, then it is clear that more effectively defined protocols still need to be set.

If consistent in-school access is a problem, so is a varying level of home access to current technology. In contrast to television ownership -- which in Canada is essentially universal -- current estimates put the rate of Albertan student use of email-capable computers at something approximating 41%[64] . It is obvious, then, that the inability for so many students to complete an on-line assignment for homework has clear implications for our pedagogy. Rita recounts an experience with a parent:

> I had a parent today, for example, phone and say, "You want all your assignments word processed?" And I said, "Yes, done on the computer." And he said, "Well, we don't have a computer, I'm very sorry." And I had to stroke and reassure him that that was not the intent, that every student was not expected to have a computer, that I give them lots of computer time and yes, they may have to stay later -- and obviously if someone who doesn't have a computer at home, and she's slow in keyboarding. And he says, "Well, why should she have to stay after school?" And I said, "Well, that's just something we're going to have to work at, and she's going to have to improve her keyboarding skills."[65]

Rita has clearly indicated to the child's father that she is willing to stay after school in order to assist the student, yet the parent is resistant. In contrast to the hectic world of the traditional school, the platforms at Yvonne's

[63] Allison Deutche, p.3
[64] "Toronto Globe & Mail", October 13, 1999, p. A6
[65] Rita Riviere, p. 6

storefront school are easily accessible. Yet there too she sometimes encounters an innate fear of the technology:

> Unless it's mandated, unless it's embedded in the program and I'm looking for it and there's a mark for it, it'll be really hard to get the students to use technology. For example, if I say, "Look at this web site," it would be hard to have them actually sit down and go through it. Part of that is because there are still a lot of kids who don't have access. Even though we physically have access on-site, it's sometimes very difficult for kids to get on-site through either time or distance or just reluctance to be on site -- which is why they're distance learners and at arm's length in the first place.[66]

The issue of after-hours access could be very easily solved with the introduction of a multimedia-capable 600mhz $69.00 Pentium IV or Macintosh G5 backpack-proof laptop. Until that time comes, however, the problem of inequality of access will continue to plague both teachers and their students. Although it's easier said than done, teachers would be wise to adopt the twin traits of pedagogical creativity and forbearance in the face of communities with disparate levels of technological access and expertise.

While the issues that Rita and Yvonne raise here may be isolated incidents, they do indicate the need for curriculum builders to help explain to the public exactly what their technological expectations are for Alberta's students. As yet, it would seem, some of the public is still in a quandary as to just what technological capabilities our students are supposed to develop. And while there is a threshold price which computers soon fall through which will make them societally universal, it is apparent that the time of universal online access -- and an accompanying assumption of universal home use -- is still not yet upon us.

[66] Yvonne Montagne, p. 4

Corporate Convergence and Education.

While Central Alberta may be generally wealthy enough to support a higher incidence of home use than other parts of Canada, part of the hindrance to consistent home use is that online technology has already been commercially co-opted. Duffy puts this into perspective:

> There are some classes where I'm really surprised that there are so many that don't have computers at home. And there's other classes where it's ninety percent. You know, I would think that there's probably about fifty-fifty now, or something, where they would have access [at home]. And there are students who have access to computers, but really don't know how to use them for the purposes of writing a story or an essay or something like that. Whatever technology training they've had has been focused on other areas.[67]

At this point, it may be instructive to step back and look at events that may have some bearing on Duffy's concern. For if information technology only gives us another venue to define ourselves in relation to our possessions, our intrinsic worth may not defined by any rights of citizenship, but by the prowess of our lines of credit. Because of the increasing disparity of North Americans' income, however, there may be a huge number of people who are excluded from the accompanying shift to digital technology. This may, at first glance, not seem related to education. Yet, as Barber says,

> We have yet to reckon with the consequences of low-frequency broadcasts, public access cable channels, videoconference up- and down-links, and private sector satellite transmission, let alone with the possibilities of digitalized broadcasting, fiber optics, and a world-wide communications net. Panglossians exult, but technology has usually mirrored rather than transformed the society that creates it.[68]

Our western societies have created an ethos of consumerism that has given rise to an incredibly fast-paced consumer-driven information revolution. Any hope, however, of this revolution creating an equality of access or a new form of electronic democracy may to be fast disappearing in

[67] Duffy Barons, p. 3
[68] Barber, p. 87

the commercialized side-barring of all available web-space. This, of course, does not mean that we turn our backs on technologies that do have the means of helping our students link with other parts of their societies. But we must be cautious, for in Barber's words,

> without public intervention, the 'new' net technology becomes very much like the older technologies: passive, commercial, and monopolistic. First, radio, then television, then cable were initially advanced as great new civic technologies in the public interest. Each in its turn grew into the commercial, privatized medium we know today, in which the public interest in civic culture, public education, and civil and political debate is marginalized and in which commercial selling and entertainment are front and center.[69]

Sam's experience mirrors not only Duffy's perspective, but Barber's larger societal concerns:

> Network technology is like television to me. It's got so much wonderful potential. It can be an aid to instruction. But to me, I'm looking at it more as more of a resource-base, a data bank. But unlike TV, or like TV, we're not using TV to its proper potential. We're not using networks yet to their proper potential. We're accessing networks, we're using research -- it's fantastic for research. It's fantastic for a knowledge--base which you would give -- it's like giving every community their own Harvard-sized library, which you could not afford to do. So in that sense [it's all right.] But there are several things wrong with the Network: a] we don't have enough facilities for every student when they want it; b] much of the material on the Network is not verified -- it's information that somebody has put on, and it may be valid, it may be invalid. But people are taking it in print as a document. You can get extreme cases, where there are people like the Neo-Nazi's who put information on there and distort reality to the point that some people will buy into it. And you'll get the other extreme where information is so watered down it isn't worth knowing.
>
> And of course, the Network is expanding -- and getting good quality material is always going to be difficult. How do you say to students -- how do you teach students that this is what we have to find is quality -- not the junkmail. And there's more junkmail than we want. And it's also becoming a business - an advertising medium and they're cluttering it all up. But if we can get access to material, get access to remote printers, get access to more computers -- it'll be a wonderful learning tool. As you move up the grades, you become more accustomed to using it and less dependent on the actual knowledge base of a teacher,

[69] Barber, p. 82

> which is fine too. But you're moving up -- you're not getting to one point and staying there. But the Network has a potential that is wonderful -- but it's still a potential.[70]

If we are to move from potentiality to realization; from the incunabular nature of the technology to a more mature form of the societal process, then we may wish along the way to closely examine whether the headlong commercialization of the online landscape that we have so blithely accepted on our students' behalf is in fact in their best interests. Indeed, it is very easy to balance Sam's conception of a Harvard-sized library on everyone's desk co-existing with a credit-card ready screen that wants to sell us Tommy Hilfiger jeans, as our televisions do an admirable job of that every night of the week. Perhaps it is far too late for this portion of the discussion to take place, yet Duffy's simple concern for technology training occurring in 'other areas' speaks directly to AOL/Time-Warner's mission to

> build a global medium as central to people's lives as the telephone or television... and even more valuable.[71]

Will the complete vertical integration of the virtual landscape compromise our students' access to quality data? Does the notion of convergence present some trouble for our teachers in their collective desire to mold critically thinking students? Perhaps Sam's metaphor of comparing the Internet's offerings to 'junkmail' is worthy of further consideration.

Itinerant Support Staff and the Revolving Door.

Compounding the problem of school access is the revolving door that jurisdictional technical support personnel find themselves in. Though the accounting in Duffy's hypothetical school glossed over personnel costs, technical support is crucial to the upkeep of the platforms, yet, as Cam points out, there is a real problem in keeping these people committed to his

[70] Sam Magee, pp. 3-4
[71] America Online Corporate homepage: <http://www.aol.com>

jurisdiction:

> And it's quite an issue. but there again, it gets back to the scarcity of resources -- the schools don't have the money to hire the people, they don't have money to train the people, and they don't have the money to give them the time to do what they should do. With a school our size, for example, we could pretty easily justify a full-time technician. And yet we don't have one; our tech time basically works out to about three days a week. And it's never enough, and only because we've been experiencing difficulties. Normally, if we hadn't been experiencing difficulties, it would work out to more like two days of tech time. It's not enough. And the guys are good, but here again, you run into anther thing: we have a problem maintaining our workers because of the fact that they can earn more money in other areas. So it doesn't take long before -- a guy will stay with us if we're lucky for two, maybe three years -- but it doesn't take long before they see greener pastures and they're gone. And that's nothing against them, that's their own best interests -- at least they've got the gumption to do it. But the fact remains that just about the time that the guy knows his schools and knows the staff and you know him and things are starting to flow, somebody moves on.[72]

If the integrity of the hardware is held in the balance by a number of itinerant technicians, many of whom may be looking for better-paying positions, then Cam's concern as to whether student and teacher access may be at times compromised is a valid one. As Fullan points out,

> They also found that a higher ratio of district support staff to teachers facilitated the adoption process, as staff helped teachers to push for and obtain resources for new programs which teachers wanted but didn't have time or contacts to pursue.[73]

If it is increasingly apparent that the technology is still in an immature state, perhaps it is also reasonable to think that seasoned network technicians with a commitment to their particular part of the infrastructure may be invaluable in maintaining uninterrupted access for students and staff alike. As in the case of allocating platforms for in-class use, the financial implications are enormous. Yet by the same token, the possibilities for success will be much greater with stable and knowledgeable technical support staff. Cam's

[72] Cam Engel, pp. 8-9
[73] Fullan, p. 46

observation does bear further study.

Citizenship or Censorship: The Enigma of Control.

Finally one of the enigmas in discussing the nature of access is trying to judge what *type* of access is appropriate. It is a given that public schools have a mandate to try and limit student access to websites that run contrary to the norms and expectations that would be consistent for the age group in question. Yet savvy students -- many of whom, as has been already established, are more technically proficient than their teachers -- are consistently trying to keep ahead of the Web censors that jurisdictions have in place. Allison elaborates on the tension that exists surrounding web censorship in a junior high environment:

> Also monitoring the Internet sites is tough. And because I don't know enough about the Internet, I'm very conscious of my limitations when I'm supervising students after school or at lunchtime. You almost have to be there to see the sites that they're entering, and certainly we do have people monitoring sites and blocking some, but just for every one you block, there must be a hundred coming on stream. And students invariably find the ones you don't want them to find. So that's a danger.[74]

The corollary exists at the senior high school level, for many web censors are not sophisticated enough to be able to delineate the difference between a site that transgresses societal norms and one that offers criticism, commentary, or information on the same subject. Cam echoes the senior-secondary plight:

> One of the big problems we have that's a major issue at the district level is that we have an Internet censorship program in place which causes us no end of problems. And despite frequent protests to the district administration, there doesn't appear to be much movement on it. And in terms of flexibility, they will -- if we can specifically identify a certain site that we want opened - they will open it. But it becomes problematic in terms of time and resources addressed in terms of -- our basic stance is that we should be doing a job of teaching the student so that we shouldn't have to have censorship.... But on the other hand, rather than using a security program: this 'Websense' which is a ludicrous

[74] Allison Deutche, p. 2

> program, I think that we need to address the other end of the issue rather than dealing with it through the censorship.
>
> Like a kind of ironic example is that if you try and search 'censorship', you'll be blocked. Which to my mind, just kind of says it all. Like it will even block -- I was trying to contact Permabound Canada over a back ordered set of books that we were waiting for, and because of time zone changes it's kind of problem sometimes to phone them. And the Net centre wouldn't let me access their site. I've had the same problem with ITT-Nelson. But you see, all it takes is just one word in one of the titles of the books in their online catalogue, and it'll shut you down.[75]

If we proceed from the notion that this technology is yet in its infancy, then perhaps we can also see that somewhere soon there will be a network program that will be sophisticated enough to delineate between a grade eight's voyeuristic Netscape search on the topic of 'sadomasochism' and a grade eleven's more refined question of discovering elements of sadism inherent in the society of Atticus Finch. In the meantime, however, it would be wise to take note of Cam's dilemma and recommend a continuing dialogue between teachers like him and their network administrators.

A particular irony is that Cam's teaching may also suffer from his students having access to too much information. Premanufactured essays are a-penny-a-pound on the Net, and Cam has found himself in a problem particular to those who teach students of higher aspiration:

> Another problem is censorship. For example in my AP 10 course, one of the novels we look at is "The Adventures of Huckleberry Finn". The big issue is censorship. These kids, because of the nature of the kid -- when they find an Internet site they don't think, "Well gee, I should just take something from it." They will come and tell you, "You should look at this." Censorship and Huck Finn: hundreds of pieces written on it that you can find either sites relating to it -- some of them are good, but in terms of term papers, when you go into some of these things, there's another one -- the symbolism, the function of the river in Huck Finn. You go into -- it's a classic criticism of the book, there's a talk about the function of the river as a means of unity and setting the pace of the narrative. Well, this is kind of a classic exam topic in terms of an essay exam. Well you can't use it anymore. There's just too many other examples or too many other things already done on it. So one of the ways you can

[75] Cam Engel, pp. 2-3

remedy this is you can have the kids do more of the writing in class in an exam-style situation, and make adjustments and say, "Well, you're allowed to bring resources in, you're allowed your text or however you want to address those issues. But that's an effect that I don't think people have really realized was going to happen.

Of course, if you maintain a 'process' approach to writing, it shouldn't be a problem. Or if you set your topics in such a way that they are not easily plagiarized, then it shouldn't be a problem. And that's an issue that I look at too in terms of how you deal with that, and you can get much more writing done in a more personal, reader-response style than from using more classic literary criticism. And so you can choose to address it in that way, rather than looking at it in terms of tech. You know -- how do you defeat the technology? You say, "Sure, here's the site, go for it -- go take a look and see what people had to say. It's not going to do you any good."

We've had a couple of issues at school, not in my classes, and I'm not saying that because I believe that it's never happen, it's just that it's never been an issue that I've necessarily dealt with. Part of it is because of the way that I've set my topics and some of my exams, or some of the papers that they get. But teachers have accused kids and said, "Look, you didn't write this." Now I don't necessarily agree with the way that they handled it, if you want to know whether a kid wrote something, call him in and talk to him for ten minutes, and you'll know right away whether he wrote it or not. I don't think that it's necessarily plagiarism as an issue, but I don't know if at a high school level if necessarily the best thing to do is to go the full disciplinary route and threaten to suspend a kid or expel him from a course. Yeah, they'll learn, but I don't know if it's the most valuable learning experience. Also, I think that if you explain to them and look at it -- I think that you have to look at their motivation why they would do something like that. Either it's a lack of knowledge or there's some other problem, and I think that's more important to be addressed.[76]

Not only do we need to think about setting up new evaluative rubrics that might be more consistent with the virtual geography that students are now regularly encountering, it may be important to reinforce issues of copyright and intellectual property. We may wish to reconsider the nature of our assignments, for there will never be any way to deny students access to the seemingly limitless virtual horizons; our job, rather, will be to educate students about the sensibilities and protocols which inherent in an online citizenship -- sensibilities similar to the sets of privileges and responsibilities

[76] Cam Engel, pp. 10-11

they now enjoy.

Issues of access are not easily sorted, for they have to do with financial imperatives, societal attitudes, technological innovation, and the changing relationship between students, their teachers, and the kinds of information they encounter. Adaptability may be the most important attribute that educators can adopt, for the rapidly changing nature of both the society and the technology will insure that we will be dealing with new and varied issues of technological access for the foreseeable future.

Issues of Power and Control

> *These findings taken together indicate that many teachers are willing to adopt change at the individual classroom level, and will do so under the right conditions (eg: an innovation which is clear and practical, a supportive district administration and principal, opportunity to interact with other teachers, and outside resource help).*[77]

What Makes for a Broad-Based Education?

> Technology has been a goal for this school for the past three years, I think, and for the school district. And finally our teachers this year said, "Enough is enough. If I have to go through one more professional development day and look at a computer and learn a new software program, or update my skills, I'm going to scream." There's more to life than computers. We need to focus on some of the other things that we're doing in education. So we did.[78]

Consider Erin's position. As an assistant principal in a large composite high school she is setting policy, vetting budgets, dealing with the inevitable staff and student flare-ups that occur on a day-to-day basis, evaluating the efficacy of a number of Alberta Learning technological implementation plans, and rounding out her teaching timetable with various sections of English 16, 26, or 36. Is Erin alone in her exasperation? If she is not, then it would seem that the massive nature of technological change has created a palpable fatigue

[77] Fullan, p. 46
[78] Erin Meyers, p. 6

for a number of teachers. If this is in fact the case, it may be wise for curriculum builders to be cognizant of pace and expectations they have brought to the change process.

Consider too what for many classroom teachers will be the most tangible measure of educational success. Sam is most eloquent:

> And myself, I have students coming to visit me all year, and they never talk about my wonderful lessons, they never talk about 'I wrote a great essay because of you.' They say, 'I remember you said this to me.' Or, 'I remember when you did this; you're crazy when you said that.' And it was always something that happens because of the learning process -- but you wouldn't find it in my lesson plans. You wouldn't find it in my long-term plans. You wouldn't find it in the curriculum guide. But to that child, that's why they were able to learn, because something positive happened and they were prepared to open up their mind -- trust, even, sometimes.
>
> But we don't get that -- how do you measure trust, how do you measure happiness? You don't, we measure their marks, the attendance of staff, the attendance of students.[79]

Notice that in spite of all the technological background of which Sam has availed himself, it is the reciprocal elements of respect and personal commitment that still come to the fore. In contrast, there is still an undeniable measure of the frustration that many of the respondents are feeling. Cam has demonstrated himself to be a keen advocate of technological advancement, yet witness how cynical he is:

> I believe that the government definitely is in favour of more computer-based instruction even at the expense of both teachers and students. It seems that so many of the decisions that they make fly in the face of what's known to be beneficial or accepted learning practices. And I think that it comes down to a simple matter of -- if they could figure out a way where they could say that every fifteen computers equals one teacher, they would love it.[80]

Have computers come to be viewed by curriculum builders as a replacement for teachers in the classroom? Cam's suspicions persist:

> And I think that perhaps in terms of writing, although having the word processors available is good, I think of equal benefit is

[79] Sam Magee, p. 8
[80] Cam Engel, p. 12

> small class size. I know that from my own personal experience that it's making a huge difference to me as an individual having thirty students in an English 30 class compared to twenty. Just in terms of the behavior, the effort, the interaction with them. And you start to wonder.[81]

What then should form the essence of the relationship between English teacher and student; Sam and Cam seem to feel it should have something to do with personal interaction and small class size. While this in fact may not be antithetical to the implementation of more sophisticated forms of online technology in their classrooms, neither should the fundamental and crucial nature of their observations be denied.

The Mandated Nature of Change.

On the surface, it may appear that this shift to an electronic culture is separating the flexible from the inflexible. In comparing Yvonne and Erin's responses to the similar situations of having to deal with new student-management software, notice Yvonne's seeming familiarity and ease of acceptance of the product:

> So right now where we're at -- where I'm at in terms of personal use: We're using SASE [a school administration database package], of course, it's mandated. And we're probably more fluent in that program, I think, than most jurisdictions because we have access -- we use all parts of SASE as opposed to isolated parts and then front office does the rest. We do all of our own SASE work, so that's coming along. Marks books, of course. This year, we're going to have that integrated with SASE so that our marks programs are going to be directly talking to SASE which we weren't able to do before, so that'll be new.[82]

In contrast is Erin's more harried response:

> There's this push to make teachers computer literate in areas where they may not necessarily need to be computer literate. And adding information technology units to the curriculum in all areas so that I'm expected -- maybe under the new Western Protocols -- I'd be expected to have my kids doing English projects that would involve Internet research, and it might

[81] Cam Engel, p. 13
[82] Yvonne Montagne, p. 2

> involve a PowerPoint presentation and so on. And if they haven't learned that somewhere else, then I'm supposed to be able to teach them how to do that. And I think that as an English teacher, I don't want to teach PowerPoint, I don't want to know how to do a spreadsheet for instance. That's not what I look at as a traditional job of an English teacher. I want to teach them how to interpret literature, I want to teach them how to write better, I want to teach them how to appreciate other people's writing. I don't want to teach them how to do PowerPoint. So having to know some of those levels, I think, are not appropriate, and I think that there's too much emphasis being placed on computers in all curriculums.[83]

Consider Fullan's rubric for conditions of successful educational change:

- Existence and quality of innovations;
- Access to information;
- Advocacy from central administrators;
- Teacher pressure/support;
- The use of consultants and change agents;
- Community pressure/support/apathy/opposition;
- Availability of federal of other funds;
- New central legislation or policy (federal/state/provincial);
- Problem-solving incentives for adoption;
- Bureaucratic incentives for adoption.[84]

Perhaps it may be important to question whether Yvonne and Erin have had the same kinds of support, interaction, and resource help. It is important to note that Erin's leap from general computer literacy to specific concerns regarding the need for PowerPoint seems to have a rather weary edge to it. Is that due to a need for additional broad-based administrative back-up to which Erin simply does not have access? Indeed, an additional component that Cam brings to the fore is whether his jurisdiction's support for change is on-going or only extant at the beginning of the implementation of more sophisticated technology and curricula:

> One of the issues that I resent is that although the district does

[83] Erin Meyers, pp. 5-6
[84] Fullan, p. 42

> make reasonable computer courses available, the big issue for me is that the tendency to schedule them in the middle of August. And I quite resent that -- I really feel that either it should be made available on PD days, or if they want to do it during the school term, it would be more beneficial -- I really resent having to break up my summer and having to come back to take a course. And also there's a noticeable shifting in their attitude where they've been doing this for a couple of years, and they started to say, "Well, we've made this available to you for a couple of years, but after this, it's going to be up to you."[85]

Should Erin and Cam's respective jurisdictions be operating under the same timelines, it would be easy to see how the pressure from Alberta Learning for implementation of various technological methodologies would then be felt by central office administrators and inevitably passed on to classroom teachers. In contrast, it may be that the different nature of Yvonne's storefront-school culture may leave her and her teaching peers enough time to assimilate what is essentially a *resocialized* administrative environment.

If there is, in fact, a take-it-or-leave-it attitude on the part of Cam's jurisdiction, it may be enlightening to think how staff-based decision making can make the implementation easier in spite of an agenda-driven central office. Let us deliberate further on Cam's point of view:

> I really think that one of the things that we're seeing with this elemental shift, is that the powers-that-be have realized that there is an element of unhappiness in the staff.... And just focusing on one segment, it's just a simple fact that this is one area where it would be very easy to give the staff more of a say in the decision-making. And it was an area that they should have maybe given the staff more of a say. Or at least explained the process a little bit more to them.... And my experience has been that if you want to get technology implemented, first of all you lead by example, you lead by consensus, and you do it in a supportive environment.... And I think that one of the things that we're seeing with the reestablishment of our computer advisory committee in the school that this is one of the things that they've kind of realized.... We've got things in the profession that we're unhappy with not to be more understanding....
>
> There again, the thing that bothers me about it is that there is a hint of 'summativeness' about it. And I don't think that

[85] Cam Engel, p. 4

> we're there yet, and I'm not such a doomsayer that I think that we would ever be there. But it really doesn't have a feeling of a 'formative' feel about it. And it's not a supportive style of implementation. And my experience has been that if you want to get technology implemented, first of all you lead by example, you lead by consensus, and you do it in a supportive environment.[86]

If, as Fullan says, "there is a strong body of evidence which indicates that fellow teachers are often the preferred and most influential source of ideas,"[87] then perhaps Cam is in the fortunate position of working in a democratic ethos in the midst of a rather difficult time. It is obvious that Cam has some reservations about the process of technological implementation within his school, but if his computer committee is allowed to lead by example, then the massive changes inherent in a new technologically-driven school culture may pave the way for easier school-based implementation of the various facets of this resocialized technologically-driven administrative culture. The pavement may be rough, but at least the road is clear.

Approaches to Alberta's Technological Outcomes.

If Yvonne's school culture is playing a part in her more easy acceptance of the changing culture, than it may be revealing to see if there is in fact a methodology which helps her:

> So what I've done is taken the summary from the school jurisdiction of expectations and outcomes at different levels and looked at what we've got in our Distance Learning materials and tried to determine what is the fastest and dirtiest way we can accomplish these 'Tech Outcomes' using ADLC materials. In order to accomplish that, I asked the librarian from a neighbouring school to come and do an inservice for our staff in June to try and help our staff use some of the techniques that she has developed over four years in terms of using research tools that help kids through Language Arts and Social Studies create research projects in order to give them tools to use in any subject and as well satisfy Alberta's Tech Outcomes.[88]

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[86] Cam Engel, p. 16
[87] Fullan, p. 46
[88] Yvonne Montagne, p. 2

Yvonne's use of the term 'quick-and-dirty' indicates that on her part, at least, a willingness to look for the expedient and pragmatic in achieving those ends. A fellow co-worker from another school was invited to share a proven plan; she presented some alternatives in June so that Yvonne's staff could have the summer to integrate their comrade's work into their own culture. In contrast, Rita went through much the same kind of situation and seemed not as sure of herself:

> Making sure that I meet the "Tech Outcomes": They're pretty specific, and they're pretty demanding and they're pretty all-encompassing and they're pretty involved. So I took a course this summer -- just for three days -- and I made a project and that was okay. But the real benefit of that course was to sit down with the curriculum -- sit down with the tech outcomes -- and to interlock them. And I had no trouble doing that, and yet I have been hesitant and afraid and, "Oh gee, I gotta make sure that at some time I do this.." These three days just afforded me the time, and I had the energy to do that.... They are achievable, but it's -- I guess it's a new kind of experience in making your lesson plans, and making sure that you're meeting everybody's criteria. But it's definitely do-able. Somebody must have taken a look at it and seen -- but I think it's intimidating to a lot of people, and a lot of people are feeling really stressed. It's hard not to catch other people's stress -- it's very hard not to catch other people's stress, and I tend to be a little more positive, but sometimes that gets me down a little bit."[89]

Yvonne and Rita are at similar points in their careers; both are technologically literate, and both are extremely well-versed in English Language Arts pedagogy. Yet it is evident that Yvonne's equanimity in dealing with new technological expectations is not really matched by Rita's brave face. Again it may be the relative calm of Yvonne's storefront in comparison to the constant bustle of Rita's middle school that makes the difference.

[89] Rita Riviere, p. 7

Inefficiencies and Cynicism.

> *The amount of staff training is not necessarily related to the quality of implementation, but it can be if it combines pre-implementation training with training during implementation, and uses a variety of trainers.... Teachers say that they learn best from other teachers, but research shows that they interact with each other very infrequently. When teachers are trained as staff developers, they can be very effective in working with other teachers.... Failure to realize that there is a need for in-service work during implementation is a common problem. No matter how much advance staff development occurs, it is when people actually try to implement new approaches that they have the most specific concerns and doubts. It is thus extremely important that people obtain some support at early stages of attempted implementation.*[90]

It is one thing to chart the technological cosmography because it will assist in classroom implementation of curricular objectives. It is entirely another thing, however, when the culture changes so radically that it forces teachers to adopt entirely new methods of classroom management in the face of a hostile -- or at least an indifferent -- universe. Erin voices her concerns:

> And so all the teachers had to learn a new marks program in the computer and it's not particularly user-friendly, and we have glitches all the time, and we did again this morning. And so teachers who want to be teaching instead are learning how to be computer literate in areas they have no interest in being computer literate. It's one thing to be using your computer to research English and to present exams and on and on and on, but to submit marks to Alberta Ed. and not have it work -- it's pretty frustrating here in the last year or so.[91]

Has there, in fact, been enough support in Erin's school for the newly-mandated school-management program? At least one Central Alberta school jurisdiction technology administrator feels that Alberta Learning left the inservicing of newly mandated student database programming to individual jurisdictions and that there was never any over-riding plan to assist schools and teachers in managing this programming. Given that perspective, Fullan's comments regarding the interplay between Alberta Learning and schools

[90] Fullan, pp. 66-67
[91] Erin Meyers, p. 4

seem prescient:

> Unrealistic time-lines add to the burdens of implementation: materials fail to arrive on schedule, orientation and training are neglected or carried out perfunctorily, communication is hurried and frequently overlooked or misinterpreted, and people become overloaded with the requirements of new programs on top of carrying on as usual. Disillusionment, burnout, cynicism, and apathy come to characterize many people's orientation to every change that comes along[92]

Though his school culture is entirely different, Cam's view of the situation is hauntingly similar to Erin's:

> In terms of other issues in technology recently, we had imposed on us a switch in admin package for running the school. As far as I'm concerned, the implementation was totally botched. It was supposed to be up and running for when we came back for our work days in September, and to be quite honest, it's barely completely running now. It to my mind demonstrated what I consider some textbook examples of how not to do something. Not that the package is necessarily a bad thing -- some of the things that we used to take issue with are sometimes just because it was a change that not everybody wanted nor saw any benefit to. Part of it was a government decision because it made a change in the way that marks and data could be submitted electronically -- and we've been using 'Mac School' and 'Mac School' made a decision that they weren't going to support the changes, so that necessity dictated it. However, the choice of admin packages that they made was not one that anyone had any say in, and it might not have been the best one. In fact, I know several people that would argue that it wasn't the best decision made.[93]

Whether in fact the school-management package was 'the best decision' is now ultimately of little consequence. In fact, the short timelines and associated lack of orientation have created a situation where it would be surprising if Cam didn't feel the way he did.

External Testing.

While provincially mandated diploma and achievement examinations fall outside the immediate purview of this thesis, it is important to note the feeling of at least two of the respondents with regard to the subject. It seems to

[92] Fullan, p. 69
[93] Cam Engel, p. 9

me that the suspicion shown toward externally mandated testing is not unlike the suspicion that these respondents have shown toward the implementation of various facets of Alberta Learning's *Technological Outcomes;* if nothing else, it indicates a deep-seated mistrust of the very curriculum-building agency that should be providing guidance. Sam's concern is most telling:

> I don't have a problem with (achievement) tests, because I use them the way they're supposed to be used. They're supposed to be used as a general indicator of how you're doing, how the kids are doing. Are you teaching the curriculum? Well for that, I think that it's a wonderful thing. However, just because my marks are very high or very low does not judge me as a teacher. I may be very low some years because I've worked very hard with a particular group who have moved mountains ahead but it's not measurable by the criteria they're using. I may have a seventy average when the province may have an eighty average and people will then say, "Look at that, what's wrong with him?" But they may have arrived with a forty average.... No matter what you call those government exams, they're still standardized tests. What do we end up with: we end up with standardized people. This whole education system rewards math and science people; we send home marks dealing with Math, Science, Social and English, and somewhere in there, there may be a course in Art, there may be a course in Drama, and there may be a course in Literature or Shakespeare. But that is not even promoted: many times I tell my students that if I was judging people by their art, by their drama, and I was being judged -- I would be in IOP.... Is there anything special about this year that you did with these kids that made you a better teacher -- we don't talk about that.[94]

In building on Sam's point of view, Cam adds an extra aesthetic dimension to the argument. The question that he does not answer, but which deserves an answer in this climate of fiscal and social accountability, is whether in the respondents' minds online technology will aid or inhibit the aesthetic growth of secondary English Language Arts students:

> Now, that's an extreme position, but I think that there's that element to it that we're missing right now. I think that the whole -- I keep calling it an aesthetic appreciation for lack of a better term -- but I don't think that we necessarily do enough to stimulate the idea about creative writing and poetry writing. I think that once we get past the grade eight/middle school sort of thing, that especially with achievement testing and the high school diploma exams, that this whole element falls by the

[94] Sam Magee, p. 7

wayside.[95]

If in fact the aesthetic elements of the secondary English Language Arts curriculum are indeed falling by the wayside in order to meet the more objective and more easily measurable parts of the various English curricula, are there countering strategies that a teacher with access to an online universe may use in order to bolster a sagging adolescent affinity for the literary arts? Perhaps the use of electronic tools such as 'RealPlayer' (a digital audio and visual translation program), or the use of multiple-track DVDs will encourage students to incorporate the more traditional literary offerings of secondary English Language Arts with the kingdoms of infinite space.

Technology and Society.

At least in Sam's mind, the answer to the question of the aesthetic and the technological seems to be rather negative. Online technology, it seems, does not provide an artistic springboard; rather education in general is heading in a different direction:

> I'm concerned that education is being redefined in a manner that focuses on a business model of standardization, globalization where everything is going to be the same everywhere -- and we're going to move away from the individual as person who is worthwhile developing.[96]

As has been seen previously, Erin's exasperation with the process is apparent, but she is as concerned with online technology becoming a curricular hobbyhorse forcefully being ridden nowhere; that Alberta Learning's fascination with online technology may be peculiar only to the public school ethos:

> We had a speaker into our science department last year, and he was talking about the use of calculators and computers, and the fact that once the kids hit university that most of the professors

[95] Cam Engel, pp. 16-17
[96] Sam Magee, p. 10

> didn't allow them to use the graphing calculators. And that they never used the computer technology that Alberta Ed is saying we must use in the 10-20-30 Pure [Math] curriculum... So I think that there needs to be -- someone in Alberta Ed got on the computer bandwagon, and I think that many of us are going to suffer because of it.[97]

Another view might indicate that perhaps Erin is misguided in her stance, for indeed the pace of implementation of various facets of online technology in society as a whole only seems to speeding up. Yet it could be that the respondents' views are an indication of a malaise among the general society of English Language Arts educators in Alberta. If this is the case, then it seems that those who are closest to the implementation of the technology are also those who feel most frustrated by the process. Perhaps Alberta Learning's timelines on implementation of various forms of technology have been unnecessarily short, perhaps school-based administrators have found themselves very restricted in the amount of professional development monies they could free up for more and better inservicing of new software. Whatever the underlying reasons, however, it is clear that there is a general feeling of mistrust that has the potential to hamper speedy and universal acceptance of newer forms of online technology.

Shortcomings of Electronic Information Technology in the Classroom

...language and not technology is the true evolutionary miracle[98]

The Value of Discourse.

It is a Monday morning. Michelle Smith is about to begin teaching her grade twelve International Baccalaureate English class when one of her keenest students walks into class almost ten minutes late. Through the eighty-

[97] Erin Meyers, p. 6
[98] Birkerts, p. 6

minute lesson he makes no attempt to interact or answer questions until finally the dismissal bell rings and he waits until the class clears itself out before approaching her desk. "Mrs. Smith, I didn't get my homework done this weekend -- I'm sorry." He pauses for a long time before he begins again, "My dad, he left us on the weekend. I don't think he's coming back."

Most teachers whose classes depend on routine interaction and two-way discourse, I think, have had experiences similar to this. These experiences lead to quiet conversations around the teacher's desk, an adjustment of homework and assignment schedules -- teaching practice is ever-so-subtly altered in order to fit the particular needs of students in the class.

One of the respondents' fears that emerged from the interviews was the fear of an overly impersonal environment that relied on online technology as its primary conduit for teacher-student interaction. Sam was most concerned:

> I did a course in economics on a learning module -- and it was good. But it was one-way communication. Even though you had some chance of responding. In a classroom situation, you can tell by the body-language of students, you can tell by what they're submitting -- not just the knowledge part, but the way they're submitting it, the content, the aspects of what we would call good communication. And you can get a feeling for certain types of students that you can solve a problem almost immediately. Because the problem is not knowledge, normally. We're not knowledge factories in schools, although that's sometimes the image. When you go into training NAIT -- that's a knowledge factory, you have to know your material. But we are dealing with people here. And you cannot deal with people through a computer. As I said, as an aid to instruction, it's wonderful. But it's an aid, it's not instruction.
>
> And I look at my students and they're not thinking about, "Okay, I'm having trouble with this English essay, so it's really bothering me." They thinking about last night, parent problems, boyfriend-girlfriend problems, their imperfect bodies, their too-perfect bodies -- a million-and-one things are blocking the learning process, and usually knowledge is not the problem.
>
> And intuition is a good teacher -- and a good atmosphere in the classroom can pick out and come up with solutions that will clear away the problems so they can go toward the solution or the knowledge of the issue. In our school, for example, we pride ourselves on being 'a family'. We're not a perfect family, no family's perfect, but we have solved many problems that we may

not even know.[99]

For two millennia, educators have relied on pedagogy that has as its heart the efficacy of discourse and debate. The practice has, of course, been modified to fit varying degrees of authoritarian practices but the ideal of Socratic dialogue has retained its primacy. Is information technology even positioned to destabilize the existing polity of teacher and student, or are the concerns voiced by the respondents merely another vestige of the simple fear of the shifting paradigm? Whatever the source of the fear, Cam seconds the concern with a comment on the importance of simple interaction:

> But I also know that the best instruction in writing is if I can sit down with a student and we can look at what they've done and I can sit there and say, "Look at this, this is where you're having a problem. This is what's wrong.[100]

Additionally, it is important not to forget the democratic ethic that may be implicit in our conversations with students. Though we may tend to denigrate the notion when confronted with the day-to-day of the classroom, it may be that the concept of a 'virtual' forum ultimately runs contrary to the populist aims and objectives of public schooling. Once more, Sam voices his fears:

> It does not teach students the way we want them to be taught -- we're not turning out products, we're turning out citizens.[101]

'Citizenship', of course, is a loaded concept and brings emotions quickly to the fore, yet Sam couches it in the language of 'family' -- the discipline of English Language Arts is only a vehicle for people to communicate and to clarify their understanding of their place in the world. It is clear, then, that the interviewees place a great deal of faith in the goodness of simple student-and-teacher talk, and it seems to be a consistently-held view that instruction using primarily information technology will compromise that culture.

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[99] Sam Magee, p. 3
[100] Cam Engel, p. 12
[101] Sam Magee, p. 2

The Encompassing Nature of Technology.

It may be that especially among those who work daily with online technology there is a latent Orwellian fear of the enveloping quality of online information technology. Is this wariness manifested in daily practice? Again, Sam points out how he sees the technology as ever-present:

> These things bother me, because I have my curriculum in English, I keep it at home and I go through it every two or three nights and say, "Okay what did I miss, what can I plug in." And here I have my technology, I have my tool books on technology with examples, and I'm saying: They told me they want me to do a visual activity on the computer using morphing programs that would show the transition between one object into another object. Well that's interesting, but for me to take the time to teach three students that -- which I can do, if we had the program -- means have to take up at least one whole month out of what I'm teaching now.[102]

Notice, though, that his suspicion is not based just on the philosophical notions of Socratic dialogue; rather it also has to do with the huge amount of time that a commitment to information technology may take from his existing program -- and for a grade nine teacher whose teaching practice is regularly judged by the quality of his students' summative exams, it is easy to understand his concern. It is intriguing how he further refines the debate:

> But my impression is that the technology is becoming the curriculum.... I don't want to say, "Okay, I'm teaching you computers." Because I'm not, I'm teaching students to live, and the way I'm doing it is through English. And one of the resources is computers. And that's getting forgotten -- that's getting forgotten by the people who have the power to change everything, and they're pushing it down on us, and that's our problem.[103]

Do we teach students English? Or do we teach students about life though the medium of the discipline? Is it a measure of the infancy of the technology that teachers cannot yet trust a student's online electronic experience as complementary to the concepts of citizenship and life experience, or is it simply that teachers are not yet willing to see the multitude of those concepts

[102] Sam Magee, p. 6
[103] Sam Magee, p. 9

and experiences as legitimate? Rita adds her voice to the concern, but is perhaps more cautiously optimistic:

> And I'm also concerned about assignments that are technology-driven rather than curriculum-driven, and that maybe at some point may become more the case. I'm pretty sure that we can tailor our assignments so that it is curriculum driven, but we have to be really careful about that -- go onto the Internet and research this -- I think that you have to redefine the assignments. Go on the Internet and compare this situation with that situation so that there's some critical thinking going on. I'm quite concerned about the critical thinking.[104]

It is important to see that Rita -- ever the pragmatic teacher -- is willing to make a a place for synthesis between online technology and teacher responsibility. She also indicates, though, that there is an inherent inertia attached to the process of technological implementation; in listening to the anxiety that runs underneath their commentary, it would seem that this is perhaps where both Sam and Cam's uncertainties lie, too.

Electronic Dependency.

Perhaps much of the hesitancy is based on the fear that a continued reliance on electronic media will compromise students' basic skills. I have examined one part of the argument in a discussion on "The Virtues of a Papered Environment", but it seems worthwhile to carry the discussion a bit further. While some writing theorists (whose work will be examined in Part One of Chapter Five) indicate that word processing by itself provides a fluent environment in which to work, there are still those who believe that a writer's planning and drafting may most effectively happen outside of the electronic environment. Allison is one such person:

> And I think that technology is great, but when it reduces our other skills -- when we lose perspective of what we're supposed to be doing here -- then it's going to be a disadvantage in the future. And I really am conscious that any good writing -- as you know -- requires a great deal of thought, a great deal of planning

[104] Rita Riviere, p. 3

> and organizing, and then often two or three copies. My Masters, I think I redid that ten times before I got it to the point where we thought it was acceptable -- and probably I could have edited another ten times. But students are inclined to shorten that process.[105]

Does the electronic writing environment aid or inhibit effective classroom writing? While generally an enthusiast of the online world, Cam also has some hesitations about the process:

> I'm a little bit concerned, sometimes, in terms of what we would call the syntax and the grammar and the spelling aspects. The kids are definitely spell-checker dependent. It makes some shifts for teaching, and I don't think that we've necessarily caught up to it yet. I know that we haven't. Right now, when I see the kids coming in in grade nine because of the kinds of errors that are made on assignments and not caught. There is an element, of course, of a lack of caring, and I don't know how much of that relates to the ease of production. Because it's so easy to dash this stuff off, maybe they don't look at it and take the time to check stuff. Grammar -- there are some teaching things that are occasioned by it -- like when a kid uses 'Word' and when he uses the grammar checker and it keeps coming up 'passive voice' and they don't know what it is, then they'll come and ask you. And so there you have a classic teaching moment and once you explain that to them, they're going to remember that. But you really wonder if our students' or other children's command of the English language is going to be dependent on a software package.[106]

It is important to see that in spite of (or perhaps because of) the limitations of the word processing program, Cam still makes time for teachable moments. If a student approaches a teacher with a question on 'passive voice' as a result of an electronic detective highlighting the problem, then the immediacy of the situation may serve to create understanding more effectively than any half-hour classroom discussion of the same topic. This is not to make light of Cam's comment, for the other point he makes is that teachers still function as a crucial intermediary between the software and the student -- perhaps, in the end, not a lot different from the mediating we sometimes do between traditionally-written text and student.

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[105] Allison Deutche, p. 5
[106] Cam Engel, pp. 11-12

Is there possibly an element of urgency attached to electronic word processing that may inhibit clear and lucid redrafting? If 400 students are sharing one computer lab, as is the case with Allison's school, perhaps it is easy to understand her discomfort:

> And I'm afraid that when it's a situation of "Let's get it done, get on the computer, finish the assignment," we're working towards the assignment, but we're losing the benefit of the process. And I think that if we do have the advent of the verbal computer, we're going to lose that again. Because people are going to be inclined to verbalize ideas, and not worry about sentence structure or effective communication, and so much has been lost in our communication skills. So I'm worried that the process might -- if we expedite too much, we might lose some of the benefits of the sweat and grind.[107]

Notice that the writing process implicit in Allison's classroom has much to do with 'sweat and grind'. While the comment is facetious in nature, her observation that voice recognition software may place a further cognitive barrier between student and the grammatical process is one that is worth considering, particularly in light of Erin's previous comment regarding high school use of graphing calculators, and their subsequent non-use at the University of Alberta. Certainly students who are not able to understand the grammatical relationship between a series of laser-printed but passably-linked sentences of their own creation may be no better off than students who cannot understand the trigonometric relationship between a series of equations floating on the screens of their $169.00 calculators.

[107] Allison Deutche, p.6

Simple Gifts.

> *Reading, because we control it, is adaptable to our needs and rhythms. We are free to indulge our subjective associative impulse; the term I coin for this is* deep reading: *the slow and meditative possession of a book. We don't just read the words, we dream our lives in their vicinity. The printed page becomes a kind of wrought-iron fence we crawl through, returning, once we have wandered, to the very place we started.*[108]

Who amongst has not been disappointed at a screen adaptation of a novel that burrowed its way close to our being? We are swept up by good books, for we become royalty in their infinite space, only coming back to the firmament when it is finally time to turn the light out or put supper on the table. But even good film is always bordered; it is forever equivocal, and our grandest cinematic dreams are hemmed by realities of budget and location. With that in mind, we may wish to mull over Rita's concern regarding her students' bookish habits:

> One of my greatest concerns is that kids will lose the pleasure of reading a book. I know that sounds maybe -- picayune -- but I am concerned about the physicalness of sitting down and reading a book and being able to experience that without movement, and I'm concerned about that particular development in the brain.[109]

Rita's classroom is usually abuzz with children trooping to the library, sprawled in two's and three's in the hallway outside her door, alight with the intensity of thirteen-year-old debaters anxious to make their points. But there are times when to go past her classroom is to go past a church in high liturgy; for the place is absolutely quiet, students snug in their desks with novels and magazines forming the alpha and omega of their experience. Can an online version of a beloved novel, with hot links to other places in the text and to related literature on the World Wide Web provide the same quality of experience? Cam has an observation:

> I liken it to where we look at television where we see the differences in the camera angles, and the new camera

[108] Birkerts, p. 146
[109] Rita Riviere, p. 3

> techniques, and the speed at which the camera shifts, compared to a more leisurely or poetic view of things. Where they thrive on this, I find it vaguely disturbing, or uncomfortable to watch for an extended period of time. So we've neatly shifted from print to visual -- but I wonder how much of a relationship is there.[110]

Two decades ago, MTV brought us an edgy, disjointed highly graphic viewing environment -- and as Cam says, our students thrive in this environment. While it is undoubtedly energizing for a while, perhaps we should also not to forget to preserve the sanctity and simplicity of a sometimes-quiet classroom.

Part of the first draft of this thesis was written using a rollerball pen and a lined legal pad. I wrote the words backhanded in black ink, roll them around the back of my throat, crossed some out, then began again. I like a rollerball pen better than a ballpoint, simply because it 'feels' better. Is there a better interplay of ideas on that legal pad than when they are created out of the ion-charged RGB ether? I cannot say for sure; I only know that I am not alone:

> I personally derive pleasure from writing, and I don't mean in a creative sense, I just mean the actual physical act of it. I think that although there is an increase in the fluency [of students], there is a decrease in the appreciation of the quality of the words.[111]

In his musical poem "Appalachian Spring", Aaron Copeland borrowed a wonderful old Shaker hymn for his theme. It's a contemplative piece; at once lonely and rich. Yet the original words stay with me, and they often remind me of the unbreakable link between simplicity and freedom:

Tis the gift to be simple, tis the gift to be free,
Tis the gift to come down where we ought to be;
And when we find ourselves in the place just right,
T'will be in the valley of love and delight.

Perhaps we should help our students and fellow teachers to remember that

[110] Cam Engel, p. 11
[111] Cam Engel, p. 11

there does not always have to be an electronic mediation between ourselves and the rest of the world.

The Strength of the Electronic Paradigm

In contrast to the weariness displayed when I broached the subject of change, the respondents all exhibited a great deal of enthusiasm for the more practical aspects of integrating online technology into their daily classroom practice. Indeed, when the interview topic shifted from the political to the practical there seemed to be a visible lessening of tension amongst all respondents.

Perhaps it would be interesting to examine where one of the respondents -- and indeed all of us who have been teaching a decade or more -- has come from:

> Back when we started teaching, we used to write things out and then put them through the Gestetner and you were purple from head to foot. Now, all my tests and things are on the computer and on disc and hard drive, and I go back and forth between my home computer and this one. So everything is typed up and printed up and so on.[112]

It may be simply stating the obvious, but it's important to remember that just twenty years ago, blue-inked ditto paper was still a common method of 'worksheet' creation. Irrespective of the politics surrounding the implementation of word processors, the ability to mold, meld, and imprint packages of words effortlessly and efficiently has forever changed the mechanics of teaching -- and perhaps even the nature of the profession.

[112] Erin Meyers, p. 1

Changing Role of the Teacher.

It has always struck me that the societal tag 'virtual reality' was a ludicrous oxymoron; either something is there, or it's not. Are students' handwritten words on pieces of lined yellow legal paper, for example, any more or less representative of their work or themselves than their pixilated emails that float in front of a teacher's eyes in an electron soup of 256 colors? If our society has come to debate the virtues of Ally McBeal as though she really existed, certainly our students' electronic offerings deserve a more transcendent term than 'virtual'.

And the definition of 'student' is changing too, for pupils no longer need to be always physically on-campus for there to be considered and profitable interaction between them and their teachers. 'Normal' electronic student-teacher interaction is currently limited to the intervening times when there is no face-to-face contact between the two, yet notice how Yvonne's storefront school has stretched the boundaries of student-teacher dialogue with the aid of an electronic umbilicus:

> And we have our first out-of-province students; that is an interesting new direction for us. We have a family moving from Ontario in November and they want to start with Alberta curriculum now. So we've got a combination of home-schooling students and outreach students and we are communicating with email with them in Ontario -- they've flown to Edmonton, met with our principal, done some personal interviews in Edmonton. Mom and dad have flown back, the kids are at home -- they're involved in both home-schooling and outreach, so I've today emailed the student a lesson plan and we're mailing the books out to him and we'll be conducting the first two months of their schooling via email.[113]

Of course, this does not mean that the teacher is out of the picture. If anything, teachers have a responsibility in the online universe to be more succinct -- to make each email into something thoughtful and topical. In fact, when I had occasion to talk to Yvonne about this situation some time after the interview, she indicated that when her school was audited by Alberta

[113] Yvonne Montagne, p. 3

Learning for pupil status early in the winter of 99-00, the residential status of this family was challenged -- and it was only through the presentation of an email trail and accompanying data that Alberta Learning's adjudicators were satisfied that this family was legitimately enrolled.

Of course, teachers do not have to be physically separated from their students for a less didactic relationship to evolve. With the advent of electronic and personalized electronic 'field trips', it is intriguing how Rita now sees herself taking on a less obtrusive role:

> And the potential that I see that really excites me as a teacher is that the role of the teacher will evolve into being a facilitator. I don't know if that's a catch-all phrase, but what I mean when I say facilitator -- I mean someone who is not standing at the front of the room lecturing. I mean someone who is working one-on-one, someone who is individualizing learning and you have different kids going on different paths, and that you're able to do that -- that you have the time, or suddenly you've got the whole Internet and all those resources right in your classroom. You don't actually have to go on a field trip, so that you can become a facilitator in learning rather than a lecturer.[114]

In principle, perhaps this is little different than the 'student-centered-education' movement of the 1960's and 70's, yet it does point classroom practice back to the primacy of the student. Perhaps the difference between this and the earlier versions of the pedagogy is that online information technology allows students to move almost instantaneously from topic to topic; it gives students the freedom (within reason) to follow their synaptic connections. This will not free the teacher from any academic responsibilities; indeed, the individualized nature of students' electronic journeys and the change in student-to-student interaction that we see as a part of learning in a democratic society may put even more responsibility on the classroom teacher to be innovative and attentive to students' particular needs. This is still very much in our collective technological future, but as Rita has pointed out, it will present the classroom teacher with the option of letting the locus and

[114] Rita Riviere, p. 2

responsibility for instruction shift to motivated students and their use of Internet nodes.

Ease of Professional and Administrative Organization.

In addition to the differences that online communication has made in the English Language Arts classroom, it is interesting to see how it has assisted daily communication. While the substance of email can ostensibly be transmitted through regular post, a telephone, or a fax machine, the instantaneous way in which electronically written, exactly reproducible communication can be disseminated has changed the nature and quality of the communicative form. Witness Yvonne's interaction with colleagues in similar schools all over Alberta:

> Email is really a large and important communication tool in our office. We use inter-office email constantly. The professional association I am concerned with has set up a post office where we can communicate provincially with our counterparts, and that's a big part of our communication with other outreach programs that up until now have been very isolated -- there's been a huge lack of connecting and communication there. So that's been a very important use of technology in developing our association in order to keep in touch with people. Probably we receive two or three emails a week from members across the province that are trying to start or upgrade programs or present cases to school boards or who are looking for help -- different educators in that field.[115]

On a more local but no less important scale, Erin's ability to communicate with her secretary regarding matters of school management has certainly enhanced the organizational culture of her school office:

> In terms of the administrative use, it's really helpful because we can send letters back and forth and I can edit things on my secretary's machine and she can send it back to me -- and it's just faster, it's much more efficient. I like that. The idea that all of us are networked with this new SASE program where we can track discipline for a kid and I can see everybody who's ever talked to that kid, I can pull up their attendance -- and all of our teachers do attendance on the computer now, so every single class they're inputting their information into the computer. It's immediate, I

[115] Yvonne Montagne, p. 2

> can tell at any time whether a kid's in class or out of class, late for class, and so on. And I think that's the real strength -- it's enabled us, I think, to keep better track better track of kids and also keep ourselves better organized.[116]

There was a time before the telephone, I am told, when the British Post Office thought it important to deliver letters in suburban London four times a day; a mid-morning query, conceivably, could bring an evening reply. While telephones did away with the necessity of the form, the usefulness and elegance of an essentially immediate two-way written culture of communication is hard to ignore.

Cooperative Learning.

In contrast to previous less technological ages where all English Language Arts teachers would be more versed in the nuances of the discipline than their students, all respondents freely admitted that every class they currently taught had a number of students who were more technologically literate than they were. Perhaps it is a mark of their maturity, but none of the respondents felt at all threatened by this; rather they all saw this as an avenue where a new culture of inquiry could be established. Witness Allison's response to her budding computer technicians:

> I use them as a teacher aid. They become the assistant -- they know more than I, so if I'm helping those who don't know, then I ask them to be another resource so they can take on a role of a teacher assistant. And they quite enjoy that. And so, obviously I have still quite a few students who don't have great technological skills, and so these who are quite expert enjoy flashing their knowledge and helping someone walk through certain scenarios.[117]

Observe that Duffy is every bit as casual and employs a similar strategy:

> Probably just about every day I say, "Who's a computer whiz?" in my class. And they'll come up and I'll say, "What happened here?" And they'll fix it for me. They just join in, they're part of my team, really. And if I had more computers, those would be the ones going over to help -- and they do -- if I do go up to book the

[116] Erin Meyers, p. 2
[117] Allison Deutche, p. 4

> classroom, I'll say, "Could you go and help such-and-such because I'm busy here," and they will. So I just use that knowledge -- you know, it's a great advantage to me to have some of those people that are that skilled within the classroom. So I have no problem with that at all. And they've been teachers to me as well -- I'll ask somebody, "Well, I don't understand what happened here; what did I do that made this happen?" And they'll say, "Well you went this way." And they'll backtrack and work it out. It's an advantage to me.[118]

'Team' is often an overused word, for it sometimes smacks of false camaraderie and serves to hide a multitude of ingrown relationships. Yet Duffy seems confident enough to let his students show some expertise and leadership within the classroom setting; he seems willing to give some authority over to his charges. Rita picks up on the vocabulary:

> And I know our school computer facilitator sort of set up a student tech team, which I definitely think is something we should always have on the go... And also, we've discussed in some of the cases having every teacher with a student buddy. And if you have that many kids, you have five kids and each kid has three or four teachers and you always call on that student and you can say, "Look, can you help me."[119]

Keeping in mind that there may be some real issues of information and privacy and that accompanying security protocols that would have to be in place, what would be the implications of giving technically gifted students their heads and allowing them to informally assist with the instruction and maintenance of these platforms? Yvonne explains how she takes a technically adept student and gives him a specific educational task:

> An example of that would be I bought a new CD this June and I didn't have time to look at it, to review it and go through it. One of my students was looking for a CTS project, and he was sent my way, and he was one of my English students who had just completed English 33, and I knew this kids was advanced in terms of his technology skills. I said, "I want you to take this CD, and I want you to be able to create a lesson plan for me using this CD. I want you to give me ideas of how to use these. What is it you want the student to accomplish at the end. Take the CD and write it up." And that was a pretty big task for him, but he was able to walk through it, and he demonstrated that he understood there were

[118] Duffy Barons, p. 7
[119] Rita Riviere, p. 9

> certain concepts that this CD would demonstrate. He produced -- not a great lesson plan -- but I think that it was a new approach for him, and that's how I was able to use his greater skill and time.[120]

It is obviously not a perfect lesson plan that Yvonne is expecting; rather this is one way to engage a student more thoroughly in a process of electronic inquiry. Is it effective? Certainly her approach seems to be consistent with Alberta Learning's process-based philosophy for technological integration.

There is, of course, the legitimate concern that those electronic 'field trips' may prove to be a waste of time. Again, Yvonne exhibits a deft touch in trying to achieve a balance between process and product:

> I can think of one kid who I was giving crap because he was mucking around on the computer -- it had nothing to do with my Social Studies, but when I quizzed him on it, his band had developed a web page and he was just checking up on the Web page to see who had visited and left messages and so on. So in one sense, it doesn't accomplish the purpose of achieving the curriculum goals of Social 23, but on the other hand, this guy is way ahead of us in that he's got a band, he's out there, he's promoting, he knows the need for a web site to promote his band. They've tied that into a bigger goal. So that's always a tricky one -- keeping kids 'on task' -- and yet for them, the task may be greater than the task we assign them, or more valuable to them. So that's always the challenge; use of their time according to achieving our goals -- and helping them achieve their goals, our goals. And yet their interests may lay elsewhere.[121]

Notice too that what a teacher needs is not just flexibility, but a tangible desire to investigate the nether regions of the electronic universe. The process may be ambiguous, but it is hard not to detect similarities between Yvonne and Rita and their shared enthusiasm:

> I've had shots at simply being a facilitator. And where the kids have really taken over the role of their own learning, and I've just been there. "Oh, you want to do something on the environment? Well, let's look it up." "Oh, you want to go into the archives of 'The [Edmonton] Journal', well let's try this -- oh you found it already. How did you do it?" So it becomes a tool -- it's happening more and more often, because the kids that we're getting, every year they've had a little more experience in

[120] Yvonne Montagne, p. 9

[121] Yvonne Montagne, p. 5

technology.[122]

Janet Murray reminds us that

> by giving greater control over different kinds of information, they [computers] invite us to tackle more complex tasks and to ask new kinds of questions. Although the computer is often accused of fragmenting information and overwhelming us, I believe this view is a function of its current undomesticated state. The more we cultivate it as a tool for serious inquiry, the more it will offer itself as both an analytical and a synthetic medium.[123]

If online information technology invites us to analyze and synthesize parts of the world we cannot immediately experience, then perhaps we as teachers have a responsibility to allow students the chance to tackle some of these complex and pertinent tasks. They will not always succeed, and we must face the possibility that not all will always go according to lesson plan. Perhaps though, this drive to help our students achieve some kind of technical fluency -- even allowing for the fact that the *lingua technica* is as yet only partially conceived -- will be of greater import than anything we can possibly imagine.

Transparency in Student Writing.

It has long been a hallmark of contemporary writing pedagogy that teachers must first strive for fluency in their students' writing. It is only when this has been achieved to an acceptable degree, so the practice goes, that a teacher expects students to control the finer points of the language. Erin, as you will remember, is currently teaching English to Integrated Occupational students; thus we may reasonably expect their facility with the nuances of the language to be less sophisticated than their more academic classmates. Implicit in her commentary is the notion that electronic word processing is less laborious for her students, and eventually a preferred method of composition:

[122] Rita Riviere, p. 2
[123] Murray, p. 7

> For the most part, once they get familiar with the computer, they would much rather use a computer. And I think it's the same kind of thing. They write every sentence, and they've got a word spelled incorrectly, they can just click on the mouse and correct the spelling. Or if they don't like that sentence there, they can click on it and paste it and put it someplace else. Instead of erasing it, whiting it out, rewriting the whole thing, which takes longer. And I think with writing, it's helped with their editing.[124]

Cam exhibits the same sentiments while speaking about his academic students. Notice that he links the notions of 'fluency' and 'speed' to 'a better quality of writing'. As his students' electronic writing approaches the speed of thought, perhaps for some students the mechanics of the technology disappear and the continuum between drafting, editing, and redrafting simply becomes more transparent:

> On the other hand in terms of fluency, if you look at it in terms of the volume of the writing that you get from students when they do have access to a word processor, there's an appreciable difference, I would say, in the quality of writing. I think that in terms of school-type writing, that there tends to be a better quality of writing that comes from a word-processed assignment. I don't know, and I haven't done any real study of it, but I just seem to think that -- because they are able to get their ideas down faster, and because they are more willing to make changes and -- this is the whole -- nothing to do with the whole grammar checker or spell checker thing -- just the fact that they can get their ideas down faster and they seem to be more fluid. There seems to be a noticeable difference in the quality.[125]

Specific Teacher Practices.

An Edmonton-area central office technology administrator recently made the following observation about secondary English Language Arts teachers: "Some of them are really nervous about trying to implement Alberta Learning's 'Tech Outcomes'," he mused. "But when I point out to them that their students' use of a word processor, their use of Netscape in an online search, and their building of a few PowerPoint slides really constitutes the bulk of the outcomes, maybe they feel a little better."

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[124] Erin Meyers, p. 5
[125] Cam Engel, p. 6

In contrast to the hesitancy that the technology administrator is seeing, Yvonne's description of her comrade's grade nine combined Language Arts/Social Studies project is notable in that its objectives are specific, the aims are achievable, and the skills the students learn are immediately tranferrable to other subject areas:

> And that brings us to the project that the librarian has been doing: She's developed this over about four years with a Social Studies teacher. Initially, she started with grade nine Social Studies, and the goal was 'How do we give the kids time with the computers, time to be able to walk through the different tools -- the electronic tools -- and yet do it within the Social Studies curriculum in order to satisfy some of the research requirements. So what they chose to do -- over four years it's evolved and it's gotten better and more satisfactory for both teachers and the kids -- is that they've narrowed in; they've decided to use PowerPoint, and the goals are very specific. It's something like a three minute PowerPoint presentation consisting of ten frames -- each frame has a parameter, a six-by-six parameter and so on. They have to use one Internet image, one video link -- actually the video's on it. They have to be able to use a variety of sources for their research such as an online encyclopedia, or The Masterfile Premiere -- use somebody's university site and so on. So there are certain parameters that they have to use in order to create this final product, and in the process they not only learn information about whales, for example, but they've also created image, sound, and they've had to organize it.
>
> So this project has evolved... The other spinoff is when these kids -- like in grade nine everybody does this, like I said, it's 25% of the course -- when these kids get to grade ten, eleven Biology, and they're asked to do a research project, they are begging, "Can I please do it in this PowerPoint, for example, format that I've learned and loved?" So they're pushing the boundaries of other teachers in other classes to be allowed to use this tool to demonstrate their knowledge in other areas.[126]

Notice, though, the mammoth nature of the project. At one quarter of the year's work, one of the side issues may be whether other strands of the Language Arts curriculum are being compromised. The fact that the project has been evolving for four years, however, bodes well for the continuing integration of information technology into the discipline.

Cam is concerned about another facet of the situation, for at this stage of

[126] Yvonne Montagne, pp. 11-12

the evolution of the technology, there can still be some discussion as to what form the evaluation of student work should take:

> Another thing -- looking at evaluating situations like that: Subjective evaluation checklist, baseline, reflection -- one of the things I've looked at too is I've looked at a contractual thing, where I've said, "Let's set up a level here. What are you proposing that you're going to do here? And if you accomplish -- then what? For example, if you are going to create a PowerPoint presentation, you are going to create -- and this was what we used in the media course -- you are going to create probably a minimum of seven slides. You have to use three different texts, you have to use three backgrounds, there must be animation, there must be sound, there must be a video clip incorporated." And then [you evaluate] the degree to which they succeed.
>
> And it all depends on how much of a breakdown you want? Are you looking for competency, or are you looking to say this is an 'A' and this is a 'Fail'? And that's part of it too. In some regards, they will have this expectation of marks, on the other hand I'm pretty comfortable in defending certain decision I make in terms of it -- and I don't have a problem with that. Sometimes you get some weird looks from administration, but if that's what you specified as a requirement, and that's what they completed, well big deal. So you've got a 75% class average -- maybe you're just really good.[127]

The premise that underlies all of these forays into technological integration, however, is the notion that there must be some flexibility in how teachers adapt Alberta Learning's curricular expectations to the class' day-to-day. Yvonne's practical, innovative approach perhaps best summarizes the respondents' pragmatism:

> If we find that a kid has capability, then we run to our Oz, or run to our CTS and try to find a module where he can get credit for that capability. We've already demonstrated that in many of those modules is a product that what's produced at the end the kid can already do that. Then we don't hold him back and say, "Yeah, but you didn't do set 2 and 3 and 4. But can you produce a web page, can you produce a two or three minute PowerPoint presentation. If a kid can demonstrate that, then we're able to move him right along in terms of the credit granting -- and I think that's a plus we have for our kids. So we try to recognize and acknowledge and reward the kids for that.[128]

[127] Cam Engel, p. 15
[128] Yvonne Montagne, p. 9

The Future

A quick look at a mid-50's 'Popular Science' or 'Mechanix Illustrated' will remind us that by now we were all supposed to be driving to work in flying cars, our homes were to be completely self-contained with furnace-sized nuclear reactors in all of our basements, and worldwide three dimensional communication was to be easy, cheap, and crystal-clear. Perhaps the only element of those Cold War pipe dreams that has come close to fruition is our acceptance of electronic telecommunications technology. While prognosticating often proves an embarrassing hobby after the fact, perhaps it is fitting to end with an opinion as to just where online technology may take our English Language Arts classrooms.

> In terms of the writing process, I think eventually -- just in terms of where our society as a whole seems to be going with the portability and the ease of laptops and everything else, I think that it's going to become essential. I honestly believe that in ten years when our students come to school, they will sign out a laptop computer that will be theirs, and they will plug into the school [and get their] assignments.
>
> Now, this may smack of science fiction, but I don't think that this is beyond the realm of possibility. And I honestly think that this will be the mode -- we're already seeing little portable keyboards that are at a $250-$300 price. Which would adequately fulfill easily 75% of the average functionality that a student needs. And I think that will be the way -- maybe a little bit more. I'm not saying $2000 laptops, but I'm saying that definitely will be the way. Then, things like cursive writing and handwriting and esthetics like that will become a whole other objective that we'll teach. I think that there will be a place -- that there will almost be like an art course.[129]

With the price of 400 mhz off-brand Windows platforms hovering around $600 in the spring of 2000, it is not inconceivable that Cam's prediction will be fulfilled before the middle of the current decade. The haunting question, however, is whether Cam's universal $200 laptop will in fact be enough for our students, or will we all still lust for the $5000 machine that will provide us with three-dimensional interactive informational and cultural

[129] Cam Engel, p. 16

programming. Is it not likely that our curricular expectations will have evolved again to make the interface with that upgraded technology the new universal standard? For just as Gutenberg could not have envisioned Shakespeare, perhaps our cultural preconditioning blinds us to what new cultural and academic possibilities await when digital convergence meets a new Stratfordian.

Chapter Five

Presuppositions in the Online Writing Environment

> *Yet anyone who remembers the days before word processors realizes that the relationship between writer and text has changed, and not just because of poststructural theorists like Barthes and Foucault. While word processors undoubtedly have eased our production and revision of texts, they have also altered our spatial and tactile relationship to the writing process. And some would argue these changes are not necessarily for the better; perhaps all of us in the computers and writing community know a Luddite colleague who eschews the technological elegance of an Apple PowerBook for the simpler pleasures of an antique fountain pen and hand-bound writing journal. To the technological cognoscenti, such resistance seems at times like quaint nostalgia for a world that is quickly disappearing. But the more I scour the digital landscape to keep abreast of new technologies, the more a gnawing question tugs at my synapses: "What is being gained and what is being lost as the tools of literacy increase in complexity?"* [130]

How much better is our students' writing now in comparison to the students who wrote their pens dry for their English Language Arts teachers in 1978? Has current computer-mediated communication given writing teachers a qualitatively better product? It may be a crucial question. Implicit in the respondents' comments are the notions that in spite of the snags inherent in the adoption of any new set of societal norms, the electronic culture is, generally, good enough to adopt. But what if it's not? What if students in fact did write better before the wholesale adoption of electronic assistance? While there will never be any going back, we may do well to examine the premises of digital communication.

[130] Honeycutt

The Efficacy of Word Processing

Perhaps a simple question is best: In what ways do word processors make a developing writer's work better? While the topic has generally been relegated in the past five years to one of subordinate status, Sam still has some unresolved sentiments about electronically-mediated writing:

> If education is merely a factory for knowledge and learning and producing items, then you can say, "Gee, a computer can do a better job, because it's clean, clear. It can do your spell check, it can do your grammar check, it can check your paragraphs for you." And maybe that's what some people want in certain aspects of our teaching. But the writing process really is a process you put in place to help students think through, to put down, to organize, to do internal self-debate. From that self-debate, you come up with ideas. Ideas that we feel are generally accepted within our society. Handwriting has its limitations. For myself, I will take anything handwritten or typed, it doesn't matter, no extra value for either. However, the limitation with handwriting in the learning process is that if a student makes a few mistakes in using a computer, it's very easy to change. In handwriting, the process becomes more arduous because you may have a two-page essay which has five mistakes in it so you need a new copy -- they must rewrite the whole thing. So I think that using the computer technology for the learning process -- this is very good. But I don't think that we should get away from handwriting, not perfect handwriting, just that form of communication. And work on that as well.[131]

It may be instructive to pick up on Sam's assessments of writing process: While Cam has talked in the previous chapter about the transparency and general goodness of electronic writing, Sam's corollary to that may be that a lack of arduousness -- a lack of involvement with the text -- may in some cases compromise writing. Sam itemizes a four-step procedure inherent in good planning:

- to think through
- to put down
- to organize
- internal self-debate

It would seem that all of these steps could be accomplished in an electronic as well as a cursive environment, but these are all dependent on having the time

[131] Sam Magee, pp. 5-6

to facilitate an ongoing involvement with text. Do writing teachers have the flexibility to allow that same kind of interactive ethos in an electronic classroom? Indeed, Honeycutt's review of Haas' 1995 study on computer technology and writing underpins Sam's concerns. Honeycutt summarizes two of Haas' concerns about electronically-mediated writing:

- Less planning with computers -- writers in the study planned significantly less when using word processing than in the pen-and-paper condition. Haas also reports significant differences in the percent of planning before writers started producing text, with computer writers moving much faster toward text production.

- Less conceptual planning, but more sequential planning with computers -- Haas believes these results support earlier reports, such as Bridwell-Bowles et al., (1987), that word processing encourages "an over-attendance to low level concerns, tidying up and fiddling at a local word or sentence level" (p. 96).[132]

Perhaps rather than a wholesale and uncritical adoption of the electronically mediated writing process, teachers may do well to check on the quality and the nature of the planning that goes into the pre-writing and editing stages of textual production. And given the speed at which a laser-printed document can come to 'look' good in the eyes of a student, it may be doubly important for students and sometimes teachers to check planning, editing, and redrafting protocols that have been established in the secondary computer writing class.

Consider, too, Haas' conclusions regarding students and their over-attendance to low-level tidying as opposed to a more qualitative interrogation of the basic structural aspects of the text. While it seems to be best for writing teachers to ask students to move from an initial fluency into a later and greater command of the text, teachers may want to ask whether at some point their computer-writing students are spending enough time questioning the initial structural integrity of their work before beginning to change the less important elements of the document.

[132] Honeycutt

It would seem that the research of the last decade-and-a-half regarding the quality of students' word processed text is inconclusive, and there may be a fundamental reason for that: the production of any text is a transactional process which is dependent on many factors, not the least of which is the recursive interaction between student, teacher, the media in question, and others in the environment. Equally important, though, is the amount of time that will be devoted to the processing of the text -- whether that be manually or electronically. Since the effective use of time is also fundamental to the ultimate quality of the finished product, it would seem that teachers in an electronic writing environment would do well to pay liberal attention to the time given to students and their planning, drafting -- and finally editing -- of a seemingly perfectly turned out laser-printed document.

Networking and Collaborative Writing in the Electronic Classroom

> *"No," thirteen-year-old Lara answers slowly. "We're not allowed to write emails to each other in school. They say that Hotmail might bring a virus into the school, but everybody knows that's just stupid. They're mainly worried about us gossiping too much, I guess."*
>
> *"And when I get home from school," she continues later, "I'd say that about 70 percent of my email is venting to my cousin and my friends, and about 30 percent is on actual school stuff."*

Lara is a grade eight student in a junior high school in the greater Edmonton area. She types most of her assignments on the family Macintosh, is online every day at home where she writes to her friends and explores the nether regions of the electronic universe. She is perhaps typical of an upper-middle class Alberta student who has never lived without an online electronic link to the rest of the world, yet in contrast there is noticeably absent in respondents' comments any mention of the integration of networking or collaborative writing practices into an online environment. The lack of response in this area runs curiously counter to emerging practice:

> With knowledge seen as rhetorical, or socially constructed, the collaborative aspects of writing became foregrounded, and any technology that enabled more effective collaborative practices in writing became attractive. Summing up a lot of work that built on this insight, Gail Hawisher and Charles Moran say, "we believe that a pedagogy that includes email will be highly collaborative. Our profession is increasingly interested in collaborative writing; email and the virtual 'space' of a network makes collaboration easier by dissolving the temporal and spatial boundaries of the conventional classroom".[133]

And since one of the drawing cards of electronic communication is the ability for people to 'network', it would seem odd that Cam and his passing comment about the difficulties of transparent email transaction is the only reflection of the state of electronically-mediated two-way communication amongst all of the respondents.

It may be important, however, to consider such basics as the physical layout of most computer rooms; other than the pods of five or six computers within Sam's and Rita's classrooms that students are able to regularly use, all other interviewees must send their students to computer rooms that are physically separated from their regular English Language Arts environment. These computer labs are all set up in a similar fashion: Inside the online classroom sit two dozen or so walled study carrels that inhibit any kind of spontaneous student interaction -- or indeed, any meaningful discourse between teacher and student. For students sit with their backs to the immediate classroom environment, and when they look up from the computer, they are greeted with a wall of arborite -- and if they want to see beyond that wall, they have to stand up and move away from the computer. If we contrast that to the layout of an English Language Arts classroom, where 'a parliament of ideas' and its concomitant interactive environment forms the basis for at least part of the physical space that students inhabit, it is not hard to see how the isolation and silence of the Victorian library is still associated with online educational practice.

[133] Cooper, p. 143

And while MUDs and MOOs will allow our cyberpersonalities the freedom to float through the electronic cosmos and play with other electronic apparitions, the reality of the connected student in the electronic classroom may still be much more mundane. An adolescent high school English student, for example, might be hesitant about sending an electronic letter into the rest of the online world under the appellation of, say, *Buffntall,* if his buddies know that *Buff* is really five-foot-four and has a bad case of acne. Of course, it's not just a question of insecurity; issues of privacy and security are also crucial here. Cyberpersonalities may indeed appear to be fluid, but for our students, underlying insecurities may never be far from the surface; thus our students may be less willing to interact electronically than we might assume. Kolko concurs:

> All together, though, these critics propose a disturbing theme: that self in cyberspace is not just multiple but *re-writable,* somehow separate from the situated self behind the typist. While a certain fluidity of identity in text-based virtual realities is incontestable, the question remains as to how and and whether the physical self can be completely masked by acts of linguistic passing.[134]

MUDs and MOOs have inarguably become two of the foundations of the virtual communities that so many of us occasionally choose to visit, but so far electronically collaborative software seems to have done little to reinforce the more ordinary communicative practices of the classroom. While it may be that students simply may not want to show their electronic prowess while under teacher supervision, there are other lingering questions: Is it that the software not good enough, is it that the software is not being used, or might English Language Arts teachers in general still be overwhelmed by the overly technical aspects of the environments? Indeed, if we examine thirteen-year-old Lara's plight and her inability to use email in the classroom environment, it could be argued that a tool of fundamental importance is not being exploited.

[134] Kolko, p. 65

Of course by Lara's own admission, perhaps 70 percent of her electronic communication is little more than the pixilated equivalent of note-passing, and there is the obvious concern that a free email program such as Hotmail exposes students to unnecessary advertising. Yet the observation remains that email can form the foundation for solid discourse both for public school teachers and for students outside the classroom environment; indeed part of the impetus for this chapter came from suggestions from people who subscribe to a listserver on computers, writing, and technology run out of the University of Dallas.

Given that there are instruments on the Internet that cater to multiple aspects of essentially all vocations and professions, secondary teachers need to come to grips with the apparent disadvantages of email and electronic networking and minimize those so that they can better use the technology within the classroom context. There is even a case to be made for the use of online discussions even where the whole class is physically together. Sanchez writes of two strengths of the online environment:

- that it will provide a textualized referent for discussion
- that it will provide a voice for the marginalized[135]

Let us examine Sanchez' second point: If our young friend *Buff* can find an electronic personality that is only his online, and if his ethereal self is one that can speak with authority and dignity, then might it not be in his best interests if his teachers helped him to cultivate that voice? If that voice only exists online, then through a long process of electronic writing, revising -- and a whole lot of talk -- might his teacher not have a chance to help the young man meld the ethereal and the real?

In spite of the compelling nature of arguments such as these, however, many teachers seem to be hesitant to throw their support behind electronic textual collaboration; perhaps it is because students find it harder to

[135] Sanchez, p. 101

manufacture alternate identities in an environment where they are already known, perhaps the physical spaces discourage active electronic collaboration, perhaps the spectre of specious use of email looms too large. It may be, though, that we have simply been too busy to yet take advantage of the benefits that electronic collaboration may bring to our students. Although Byrd and Owens are perhaps more utopian in their plea, their point is no less defensible:

> So far little has been done in exploring collaboration as primarily a means of moving toward communities devoid of any concern for compensation, whether in the form of receiving grades, achieving publication, or getting or holding a job. What can happen when we think of collaboration as nothing more or less than a way to move beyond our self-absorbed psyches into a working space where contact with other humans becomes an art form?[136]

To put framework to the dream, Shamoon recommends three criteria be met before students to to work in an online collaborative environment:

- that on-campus faculty discuss the scope of student involvement among themselves before they move to student use;
- that students collaborate on topics that are of current interest but are not too difficult to understand;
- that there be a good balance of formal and informal communication throughout any collaborative project[137]

That the prerequisites for online collaboration are no different from the expectations that one would have for English Language Arts practitioners in general would seem to bode well for the ultimate success classroom-based online activities.

[136] Byrd and Owens, p. 56
[137] Shamoon, p. 158

> *[N]ew methods of instruction are mandatory for a 'prefigurative' society whose educators and elders cannot adequately predict the direction or scope of social or technological change.*[138]

With the exception of Sam, whose background in programming and computer repair gave him skills other respondents lack, everyone else indicated that their more technologically-inclined students were ready, willing, and able to assist in the electronic day-to-day, particularly when the teachers felt as though they were out of their depth. But might the cheery 'sure-I'll-help' disposition be merely a facade; an acquiescence in what might be an otherwise untenable position?

In the establishment of online peer tutoring for a program that involves writing across the curriculum at the University of Richmond, Essid and Hickey chronicle the expectations that go with the peer-tutor's position. Their pre-service discussion covers such teaching details as:

- the number of assignments with which tutors are expected to assist;
- aspects of authority and collaboration;
- rhetorical and subject-oriented strategies for textual revision.[139]

In other words, it would seem that peer-tutors have a clear understanding of the parameters of their position.

Let us contrast that by reviewing Duffy's view of student help:

> Probably just about every day I say, "Who's a computer whiz?" in my class. And they'll come up and I'll say, "What happened here?" And they'll fix it for me. They just join in, they're part of my team, really. And if I had more computers, those would be the ones going over to help -- and they do -- if I do go up to book the classroom, I'll say, "Could you go and help such-and-such because I'm busy here," and they will. So I just use that knowledge -- you know, it's a great advantage to me to have some of those people that are that skilled within the classroom. So I have no problem with that at all. And they've been teachers to me as well -- I'll ask somebody, "Well, I don't understand what happened here; what did I do that made this happen?" And they'll say, "Well you went this way." And they'll backtrack and

[138] Essid and Hickey, p. 77
[139] ibid, p. 76

work it out. It's an advantage to me.[140]

In contrast to the highly structured world of Essid and Hickey's peer-tutoring, Duffy's quest for assistance may be described as ad-hoc. While it certainly fills Duffy's need to have his machinery up-and-running, is this expectation of student expertise placing an undue stress on the technologically-capable student?

If, during this incunabular time, teachers are in fact going to be regularly using technically-skilled students not just as collaborators within a writing class but as technicians and tutors, it may be wise to institute a more carefully proscribed set of guidelines for those helpers. At the high school level, perhaps, administrators may be able to augment Rita's suggestion of student teams of online technical troubleshooters by awarding CTS credit for the endeavour and developing a carefully articulated set of guidelines under which these students may 'work'. And while a collaborative ethos in certainly good for any English Language Arts class, it may also be wise for teachers to put limits on the amount of time that can be taken up through a student's online technical assistantship, for not all technologically-inclined students will respond enthusiastically to specifically outlined 'chores', either. You will remember Sam pointing out that Alberta Learning's technological expectations had made unrealistically large inroads into the amount of time he had allocated to other strands of the curriculum; by the same token we may want to remember that we do not wish to download similar sets of curricular compromises on our students -- who are even less able to object to the changes than are teachers themselves.

The process of integrating online technology into the English Language Arts curriculum has brought about a change in the traditional role of the teacher. To use Cam's phrase, "You go from the sage on the stage to the

[140] Duffy Barons, p. 7

guide on the side."[141] And while the shift in instructional paradigm may be refreshing for the teacher, we must not lose sight of the fact that most students will still demand a pace and a rhythm to the class upon which they can depend. Students, too, will never learn best through passivity, and we may do well to remember that there should be limits to the assistance which we should expect from our more technologically adept charges.

Of Beetles, Poetry, and HTML

so much depends
upon
a red wheel
barrow...
-William Carlos Williams-

Last spring, as I was writing some PowerPoint text for a school board presentation, I kept getting frustrated at the limitations of space imposed on each image. "I can't say enough on each slide," I groused. Then a more PowerPoint savvy friend from the down the hall gently chided me, "Relax," she counseled, "you're trying to give them too much information." Too much? I thought PowerPoint was *about* information.

Yet the more one thinks about it, PowerPoint and associated HTML programming are as much about *essence* as they are about actual information. For it seems that online information is largely connotative, the writing is likely to be edgier, more tightly wound. Indeed, Hesse argues that:

> Computers and more importantly, computer networks permit and invite writing to come in smaller chunks ever designed to be free-standing in the way that articles and essays have been for the past four centuries.[142]

It would seem that the prototypes for any successful PowerPoint presentation are not Virginia Woolfe's essays or Pepys' diary; rather the best prototypical hypertext resides in those marvelous Volkswagen ads of the 60's, or in William

[141] Cam Engel, p. 14
[142] Hawisher and Selfe, p. 40

Carlos Williams' glorious abstractions. Yet, if representative text is to be complete, it paradoxically cannot exist without the dialogue that is interwoven between the skeleton that dances in the electronic ether. As our students work on HTML and various other web page representations, we as teachers must remember that these media represent fundamentally different methods of communicating, but one that will also be dependent on the quality of discourse that has informed so much of our practice to date. Ironically, our students, not steeped in our own essayist tradition, are likely to grasp this more quickly than will we, for they have straddled the line between our written words and the talk that accompanies their videography -- their culture of MTV shows how well the oral and the pictographic can be intertwined. We must remember that there is a huge difference between writing *with* a computer -- a process that can incorporate all of our traditional ideas on narrative and essay design -- and writing *for* a computer -- a process which employs all of the poetic and representation skills so necessary for successful HTML writing.

The art of electronic representation, then, will bring with it different demands than those we have previously inculcated into our students. Representation would seem to be more art and poesy than logic and paragraphic, and we would be well-advised to remind students to look for poetry (and its commercial cousin advertising) in places that may be unfamiliar to us. For it is there that they may begin to find the essence of successful HTML design.

We may do well, too, to remember the enthusiasm with which these teachers generally responded to both word processing and representational activities within their classrooms. We cannot deny that there are problems with implementation, nor that the technology is still in an undeniably adolescent state, yet word-processing and accompanying online searches have undoubtedly brought alternatives to students that they would otherwise never

would have had. Indeed, to remind ourselves that these skills can bring new levels of representational ability, we only have to look on page 100 at Yvonne's description of her friend's humanities-based PowerPoint unit.

Hobson's Choice

There are some accompanying sombre portions to the teachers' responses, however, that we would do well not to neglect. As all the respondents pointed out, there are still huge disparities among students' technical capabilities, among the hardware that they own and their accompanying after-school access, and indeed among English Language Arts teachers' facility with online technology.

The adolescent and constantly changing nature of desktop computer technology has also created an almost-twenty-year cash outlay by Alberta's school divisions, and it is evident that these teachers have felt the hegemony both in terms of the increasing amount of time that has been given to technological expectations over more traditional forms of curricula, as well as in the secondary financial indicators that come in the form of larger class sizes and decreased financial support for other areas of schooling. Indeed, there appears to be some independent corroboration for their foreboding, for in the Alberta Government's budget of February of 2000, there was an increase announced of some three percent to the basic per-pupil grant -- an amount that in spite of the propaganda surrounding its announcement will cover the increases made by teachers in their collective agreements and the influx of students into the province, but will do little to cover the monies needed for capital purchases, supplies, or badly needed new information technology. In my jurisdiction, for example, the three percent increase in per-pupil grants will only partially offset the layoff of our young, non-tenured teachers -- teachers who comprise some five percent of our workforce and who ironically

provide some of the much needed pedagogical and technological impetus for any educational change.

To compound the problem, Alberta Learning's *Technology Outcomes* will necessitate a huge reinvestment in computing platforms, personnel, and associated technologies, as the bulk of Alberta's school computers have neither the memory nor the speed to deliver on Alberta Education's technological expectations, nor do existing telephone lines generally have the capacity to deal with the increased electronic traffic. And perhaps most importantly, it would seem that many of Alberta's teachers are still vastly more comfortable with non-electronic means of teaching. This will necessitate a huge teacher-inservicing program at a time when those on the right of our political spectrum continue to lobby for 'basic' education.

As educators, we have a real dilemma on our hands. In spite our our government's financial promises, we will still not have enough money to buy technology, keep our young teaching staff, reeducate our veterans, and supply our schools. Steven Jobs, co-founder of Apple Computers, put it into perspective:

> "What's wrong with education cannot be fixed with technology," [Jobs] told *Wired Magazine* last year. "No amount of technology will make a dent.... You're not going to solve the problems by putting all knowledge onto CD-ROMS. We can put a Web site in every school - none of this is bad. It's bad only if it lulls us into thinking we're doing something to solve the problem with education." Jane David, the consultant to Apple, concurs, with a commonly heard caveat. "There are real dangers," she told me, "in looking to technology to be the savior of education. But it won't survive without the technology." [143]

The frustrating aspect of all of this is that we cannot now properly teach without seamless access to these new technologies -- but we can't live with huge class sizes or underfunded operating budgets either. Once we get past the romance of online, instantaneous word-wide electronic communication, our students still come to us with runny noses, mismatched

[143] Oppenheimer, p. 14

socks -- and a fearsome desire to find out about the world and their place in it. If we are to bring wisdom and life to our students and not just knowledge and living -- if we are to provide them with a springboard into a civil and democratic society -- we need to use all tools at our disposal. And this includes not only the use of up-to-date technology, but the employment of a vast cadre of knowledgeable and dynamic teachers, support from a huge support network of parents and community members, and cooperation from a willing and far-seeing parliament of senior bureaucrats and politicians. These are neither easy nor cheap processes, and they require not just technological expertise, but the entire resource-base that our society possesses. Whether we are up for this challenge, or whether we will continue to make choices based on short-term goals and easy fixes, only time will tell.

Of Steinbeck, Ghosts, and Lighthouses

> *Nearly weightless though it is, the word printed on a page is a thing. The configuration of impulses on a screen is not -- it is a manifestation, an indeterminate entity, both particle and wave, an ectomplasmic arrival and departure. The former occupies a position in space -- on a page, in a book -- and it is verifiably there. The latter, once dematerialized, digitalized back into storage, into memory, cannot be said to exist in quite the same way. It has potential, not actual, locus.*[144]

I turn my gaze to a book sitting on my desk: Steinbeck's *Grapes of Wrath.* A Bantam paperback, it is one of several copies of the novel that I own, each dating from a different period in my own literary history. The spine on this particular book is deeply creased, as most well-read paperbacks are wont to be, and the notes in this copy date from a few years ago when I last taught English 30. It is full of marginal notes describing essay topics, chapter-and-verse Biblical allusions, observations on the differences between the Hoover and FDR administrations, musings on the archetypes associated with The American Dream, a few pages with the words 'Committee on Un-American

[144] Birkerts, pp.154-55

Activities!' scrawled at the bottom. It is, in short, a conversation with myself, a series of reflections that range from the pedagogical to the polemic. Although it is just a paperback, it is, because of the notes, unalterably and irretrievably -- mine. Perhaps we should remember that before hypertext existed in cyberspace, our own notes and seemingly random musings created a series of hypercognitive links for ourselves. And while none of this is either new or profound, it is important to remember that the digital magic of cyberspace is still but a metaphor for the synaptic connections that sustain us on a day-to-day basis and drive us toward more profound intellectual inquiry.

Having said that, we should be cautious about our students constantly interacting with an increasingly corporatized cyberspace, particularly when the nature of writing is often personal and reflective; we may do well to listen to people like Sam when he cautions against the commercial sidebarring of all available web-space. For if we take his notion seriously that there is indeed a corporate agenda to be reckoned with, then perhaps we need to look carefully at what further safeguards need to put in place. While we cannot and should not wish to return to a pre-electronic age, there does seem to be a larger electronic environment that wishes to remold our students into any number of commercially-inspired images.

Yet there does seem to be a redeeming goodness to the technology that cannot be ignored. For as I finish this, Glen Gould's ghost plays his 1981 "Goldberg Variations" beside me. Though he has been dead for almost 18 years, the digitized recording I am listening to does even not sound as if it were made yesterday, it sounds as if he is playing *now*. His humming and soft singing spring seamlessly from the speakers surrounding this processor, and his voice serves as an ethereal digital counterpoint to his variations within J.S. Bach's timeless pulse. Sometimes, there is silence where a note might be -- should be, according to the score. Yet Gould plays the silences too, reminding

us that every voice is boundaried by a sigh.

The digitized recording is flawless, Gould's interpretation a reminder of how the musical fusing of art and mathematics can so fluidly combine to give us a glimpse of something bigger than ourselves. Imagine, then, what will happen when ghosts begin to walk; for someday soon a digital video disc -- or some such smaller and more wondrous creation -- will conjure three-dimensional visions of the likes of Laurence Olivier, Derek Jacobi, Kenneth Branagh, and perhaps even some yet as unknown masters, all playing the same lost Danish prince, all pining quietly, *"But two months dead! nay, not so much, not two..."* in their respective magnificent and deserted throne rooms. For at its best, digital information technology will bring us back to nuance, back to the poetic -- and perhaps back to ourselves. It will allow us to compare, to analyze, to give our students glimpses of things for which we as teachers may not even have the vocabulary.

There are indeed many cautions associated with the dawn of the electronic millennium, but one fact remains: As a communications tool, my word processor, modem, and Internet service provider are now as essential to me as my roller-ball full of black ink and trusty yellow legal pad.

Is online information technology the cure for all of the tribulations of our English Language Arts classrooms? Of course not. But the technology has served as a springboard into something new, perhaps something more *veritable* than we have ever seen before. In the calling of our students to the use of networked information technology, though, we have not just lit fires, we have built lighthouses; beacons calling in their intensity and dynamism to others in a changing world. Not only do we have a duty to tend that light, we have a responsibility to refine the beam, to pierce the darkness in an evermore sophisticated fashion. For our students need to see what lies beyond the shoals, and one of our jobs is to help them discern a little more clearly.

But sometimes the power will go down, and we must be prepared for that; somewhere we must keep a kerosene lamp, a set of matches and candles, and a charcoal burner to keep us warm against the electronic darkness. Perhaps it is only as simple as teaching our students to keep their Bics and yellow legal pads at the ready, but we must help our students to remember that the magic is not just in the technology, but in their fingertips, too.#

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Appendix Number One

Introductory Letter

to

Participants

D.B. Jorgensen
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Date

RE: Study Concerning Secondary English Language Arts Teaching and Its Response to Evolving Information Technology

Mrs. P. Participant
A.N. Other Composite High School
Metro, AB.

Dear Mrs. Participant:

I am an administrator with the Black Gold School Division presently on sabbatical at the University of Alberta, and I am writing to enlist your support in a
pilot study concerning secondary English Language Arts teaching and its response to evolving information technology. Specifically, I am writing to ask whether I could take approximately ninety minutes of your time sometime before the end of October in order to interview you regarding your views on online information technology and its use in Alberta's Secondary English Language Arts classrooms.

You will be one of seven interviewees from the Greater Edmonton area, and should you consent, your responses will be tape-recorded and then transcribed and analyzed. What follows is a copy of the questions:

1] What is your personal experience with information technology; can you please describe both your personal and professional experience.

2] In your school, what do you see as the greatest strength of networked information technology? How do you take advantage of these strengths?

3] In your school what do you see as the greatest weakness of networked information technology? What actions have you taken in this area?

4] What are your thoughts about the transition from the 'manual' to the 'electronic' writing process? What might be enhanced through the transition? What might be lost?

5] In this time of transition, there may be students who are more familiar with online technology than you are. What strategies do you use in working with students who have greater technical capabilities than you do?

6] What else can you tell me about information technology and the teaching of English Language Arts?

7] Are there any elements regarding the implementation of information technology in your classroom that you feel are beyond your control?

Before analysis, a copy of the transcript will be forwarded to you for clarification and further response. Confidentiality will be maintained in this study, as both your identity and your school's identity will be protected by pseudonyms. In addition, you retain the right to opt out of the project up to the time of completion of the draft thesis. Should you have any further questions about my work, please feel free to contact my thesis advisor:

Dr. Margaret Mackey, Professor
School of Library and Information Studies
#3-30 Rutherford South
University of Alberta
Edmonton, Alberta
T6G 2J4
email: margaret.mackey@ualberta.ca

In order to gain a first-hand look at your working environment and to promote conversation, I propose that we conduct the interview in your classroom. I will contact you by phone sometime in the next week in order to set up a time where we may meet. Finally, could you sign the accompanying letter and in the stamped, self-addressed envelope return it to me indicating your agreement with the terms of the project?

Thank you for your cooperation.

Yours truly,

D.B. Jorgensen

To:
Mr. D.B. Jorgensen
3613 - Caledonia Drive
Leduc, Alberta
T9E 6G5

From:

_____
_____
_____

RE: Study Concerning Secondary English Language Arts Teaching and Its Response to Evolving Information Technology

Dear Mr. Jorgensen:

I have read your introductory letter and the accompanying interview questions. I
agree to become an interview subject under the terms and conditions you have expressed, and I understand that I retain the right to opt out of the project up to the
time of completion of the draft thesis.

Yours truly,

Signature: _____

Date: _____